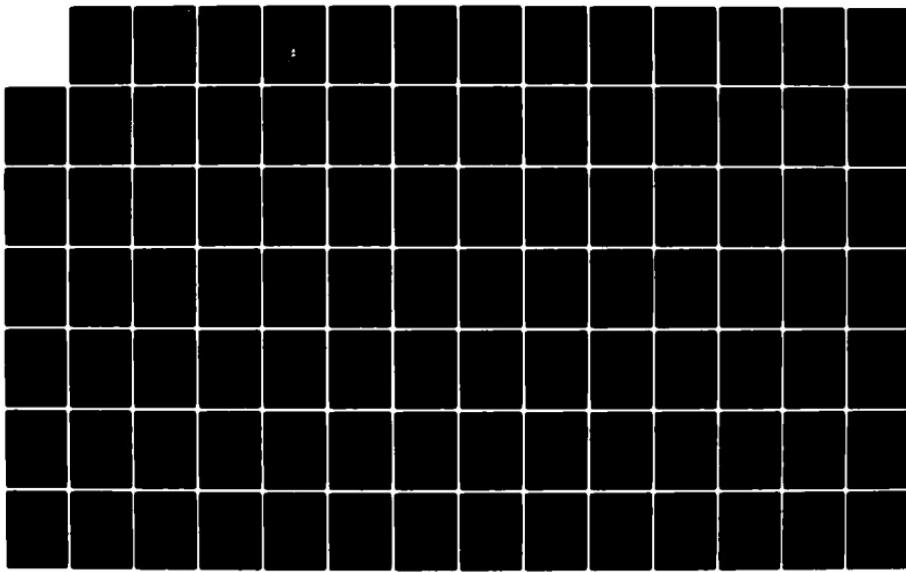


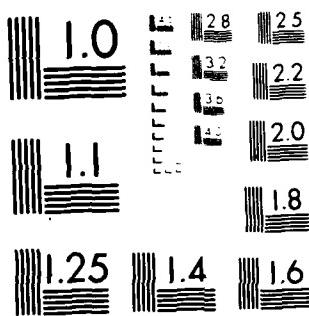
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ACTIVITY CAMP PENDLETON CA 09 OCT 81

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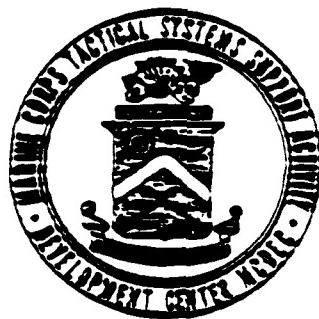
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BATTALION
COMBAT OPERATIONS CENTER (COC)
TEST

VOLUME I

TEST PLAN



MCTSSA
MARINE CORPS BASE
CAMP PENDLETON, CA 92055

9 OCTOBER 1981

Battalion Combat Operations Center (BCC) Test

Volume I

Test Plan

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ABSTRACT: Automated aids for command and control at the infantry battalion are under development. Adding this equipment to the battalion could have a detrimental effect on the mobility of the battalion if size, weight, and amount of equipment is not closely controlled. The Battalion COC Test was conducted to determine if a proposed mix of automated workstations is excessive for the control of infantry battalion offensive operations. Test objective, measures of performance, procedures, and analysis are detailed.

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9 October 1982

Analysis Section
Tactical Systems Development Branch
Marine Corps Tactical Systems Support Activity
Camp Pendleton, California

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SECTION I
INTRODUCTION

1.1 PURPOSE

The purpose of the Battalion Combat Operations Center (COC) Test is to determine if a proposed automated work station mix is excessive for the control of infantry battalion offensive operations. The approach will be to conduct twelve command post exercises (test iterations) using the proposed work station mix as baseline and three reduced mixes as alternatives. During these exercises the effectiveness of each work station mix will be evaluated.

1.2 SUMMARY OF PREVIOUS TESTS

This is the first test to be conducted on the Generalized Test Facility. Previous tests of its type were conducted on the Interim Test Facility (ITF) as part of the concept validation testing effort for the Tactical Combat Operations (TCO).

1.3 TEST OBJECTIVES

1.3.1 Test Objective One

The first objective is to evaluate the effectiveness of the proposed work station mix and designated alternative mixes in processing calls for fire from subordinate units.

1.3.2 Test Objective Two

The second objective is to evaluate the effectiveness of the proposed work station mix and designated alternative mixes in processing "combat information" (as defined in the TCO System Description Document [SDD]).

1.3.3 Test Objective Three

The third objective is to evaluate the effectiveness of the proposed work station mix and designated alternative mixes in maintaining a comprehensive data base in a timely manner.

1.3.4 Test Objective Four

The fourth objective is to assess the utility with which the proposed work station mix and the designated alternative mixes function as information systems.

1.4 MEASURES OF PERFORMANCE (MOPs)

MOPs will be used to obtain quantitative values for each of the four objectives.

1.4.1 MOPs for Objective One

The following measures of performance will be used to accomplish objective one.

- a. The proportion of specified fire support requests that are processed correctly which, if not processed correctly, would have adverse effects.
- b. The mean time to process 81mm mortar calls for fire.

1.4.2 MOP for Objective Two

The measure of performance for objective two will be the proportion of controlled items of combat information that are passed to subordinate units.

1.4.3 MOP for Objective Three

The measure of performance for objective three will be the mean score on the Data Base Update Form (to reflect timeliness and completeness).

1.4.4 MOPs for Objective Four

The following measures of performance will be used for objective four.

- a. The quantified composite participant responses to a questionnaire.
- b. The quantified participant two-at-a-time comparison of work station mixes.
- c. The test participant battlefield perception score.
- d. The qualitative summation of test participant comments on issues concerning fire support requests, combat information, and information system efficiency.

1.5 FACTORS

Three controlled variables which are significant factors in testing have been identified. These factors are: (1) work station mix, (2) experimentation order, and (3) test participant team.

1.5.1 Work Station Mix

The work stations will be "mixed" in four different ways in this test. The proposed work station mix measured for this test refers to the standard configuration for an infantry battalion COC as stated in

the TCC and MIFASS SDDs. This mix will serve as a baseline for comparison to alternative mixes. The proposed mix (baseline) calls for four work stations. There will be an alternative mix of two work stations and two alternative mixes of three work stations.

1.5.2 Experimentation Order

Each test participant team will work with just three of the four work station mixes. The order in which the teams test their assigned mixes will be varied. There will be three different sequences of mix.

1.5.3 Test Participant Team

Test participants will be provided by the Fleet Marine Force (FMF), and will be organized into four teams of four participants each.

1.6 SCENARIO

The scenario used for the test is a segment of the "MTACCS-88 Scenario." The general situation has all major combat and support elements of 1st Marine Amphibious Force (I MAF) ashore on D+10 consolidating a force beachhead in the Camp Pendleton area. First Marine Division has been tasked to continue the attack, seize, and defend positions along Highway 395 to the east. There will be four slightly different versions of the scenario in order to provide the test participant teams with a different scenario variation for each test iteration. The detailed scenario is contained in appendix A.

1.7 SEQUENCE OF EVENTS

The sequence of events is designed to introduce test events in logical order and allow for anticipated reactions in order to measure

the level of achievement of specific requirements of the test objectives. It provides a background to assist in the evaluation of participant responses by introduction of the controlled actions required by the MOP for each test objective. The detailed sequence of events is contained in appendix A.

SECTION 2
TEST CONCEPT

2.1 APPROACH

The Battalion COC Test is designed to produce a representative type and volume of offensive combat activity at the infantry battalion level to measure calls for fire processing, dissemination of combat information, and the exchange of information between the battalion S-2/S-3 and the Fire and Air Support Center (FASC). The activities will be measured using baseline and alternative equipment configurations to analyze the appropriateness of the proposed mix. This is the first in a proposed series of tests to validate the integration of the MTACC Systems or to measure similar performance at other types of units and levels of command. The test will also provide a significant evaluation of the current capabilities of the GTF to serve as a tool for future testing.

2.2 SCHEDULE

The test schedule will be accomplished as described in the following sub-paragraphs. The tentative division of activities is as follows:

- a. Test preparation--1 Jul-20 Aug.
- b. Test rehearsal--20-28 Aug, 15-17 Sep, 22-24 Sep.
- c. Pilot Test--28-30 Sep.
- d. Test period--16 Oct-30 Oct.

2.2.1 Test Rehearsal

Test rehearsals will be conducted during August and September. A pilot test is scheduled during the period 28-30 September. MCTSSA and contractor personnel will fill billets of test participant and controller personnel during rehearsals and pilot tests.

2.2.2 Test Period

The daily schedule for the test period is as follows:

<u>Day</u>	<u>Event</u>	<u>Remarks</u>
Fri 16 Oct (PM)	Brief & Introduction	Team 1
Mon 19 Oct (AM) (PM)	Practice run Test	Team 1 mix B Team 1 mix A
Tue 20 Oct (AM) (PM)	Test Test	Team 1 mix C Team 1 mix D
Wed 21 Oct (AM) (PM)	Debrief Brief & Introduction Practice run	Team 1 Team 2 Team 2 mix D
Thu 22 Oct (AM) (PM)	Test Test	Team 2 mix B Team 2 mix A
Fri 23 Oct (AM) (PM)	Test Debrief Brief & Introduction	Team 2 mix C Team 2 Team 3
Mon 26 Oct (AM) (PM)	Practice run Test	Team 3 mix A Team 3 mix C
Tue 27 Oct (AM) (PM)	Test Test	Team 3 mix D Team 3 mix B
Wed 28 Oct (AM) (PM)	Debrief Brief and Introduction Practice run	Team 3 Team 4 Team 4 mix C
Thu 29 Oct (AM) (PM)	Test Test	Team 4 mix D Team 4 Mix B
Fri 30 Oct (AM) (PM)	Test Debrief	Team 4 mix A Team 4

2.3 PERSONNEL

Test preparation and rehearsal personnel requirements are to be met by the Marine Corps and contractor at MCTSSA. Test organization will

vary slightly according to the work station mix being evaluated for each iteration. Test participants for the test period will be provided from the FMF.

Personnel duties and responsibilities are in accordance with section 2.7 ("Personnel Support") of MCTSSA Document No. 24T001/U-TN-08 of 2 September 1980, Handbook for TCO Test and Evaluation. Data collectors as defined in this reference are not required.

2.3.1 Organization

a. Control Simulation Team (CST)

Test supervisor	1 (MCTSSA)
Military controller	2 (MCTSSA)
Senior test controller	1 (contractor)
Test controller	2 (contractor)
Console operators	2-4 (MCTSSA)

b. Test Participants (four teams)

Battalion S-3	4 (FMF)
S-2 watch officer	4 (FMF)
S-3 watch officer	4 (FMF)
Fire and Air Support Center watch officer	4 (FMF)

c. Test Preparation Team

Briefers	2 (MCTSSA)
Data entry technicians	2 (contractor)
Test planners/analysts	2 (MCTSSA)
	2 (contractor)

i. Data Management Team

Data manager	1 (MCTSSA)
Data technicians	2 (MCTSSA)

2.3.2 Special Qualifications

Experience and rank qualifications for test participants are requested as follows:

S-2 watch officer	Lt or WO with intelligence MOS and/or experience in battalion/regiment S-2.
S-3 watch officer	Capt with infantry MOS
Battalion S-3	Major with infantry MOS
FASC watch officer	Lt or Capt with artillery MOS or FSCC experience.

2.4 CONFIGURATION

2.4.1 Work Station Requirements

The baseline mix (mix A) and the three alternative work station mixes are shown in figure 2-1.

MIX Number of Automated Work Stations

(Baseline)	MIX		
	S-2	S-3	FASC
A	1	1	2
B	1	1	1
C	1		2
D	1		1

Figure 2-1. Work Station Requirements

2.4.2 Work Station Layout

The layout of individual work stations in the Generalized Test Facility (GTF) is shown in figure 2-2.

2.4.3 Test Facility Layout

The test facility layout for each test iteration is shown in figures 2-3 through 2-6.

2.5 MATERIAL REQUIREMENTS

There are no external material requirements.

2.5.1 Facilities

The test facilities required for this test are: the MCTSSA Generalized Test Facility located in building 31330, and the MCTSSA computer facility located in building 31337.

2.5.2 Hardware

Hardware for the test will consist of the GTF suite of equipment and the PDP 11/70 "B" system.

2.5.3 Software

Software for the test will consist of the GTF system program, DECNET, IAS, and RSX-11M.

2.5.4 Data Base

Data Base Management System-11 (DBMS-11) will be used for the test.

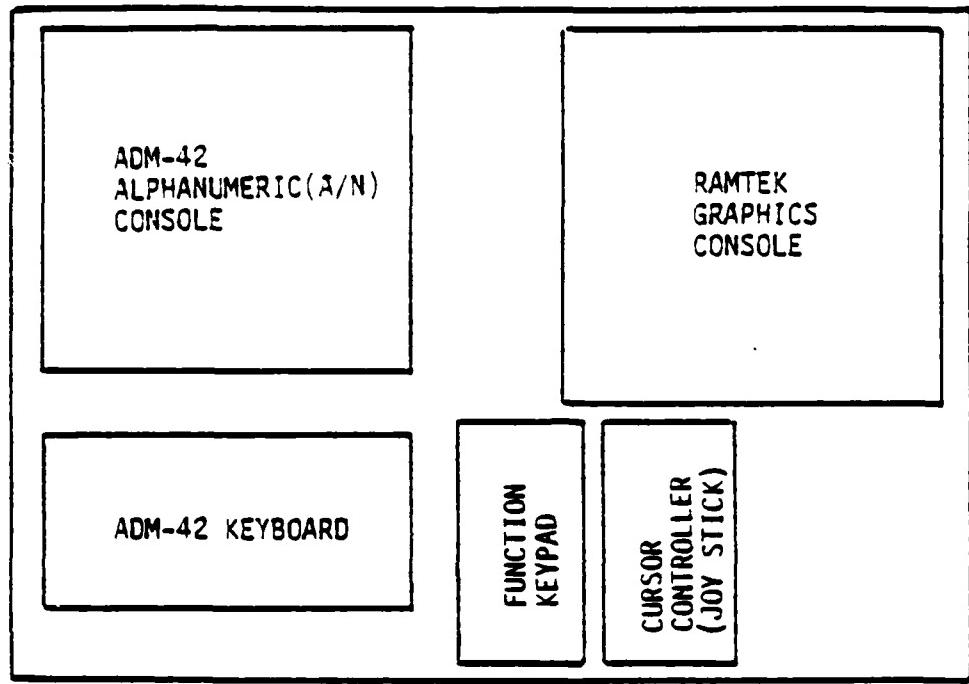


Figure 2-2. GTF Work Station Layout

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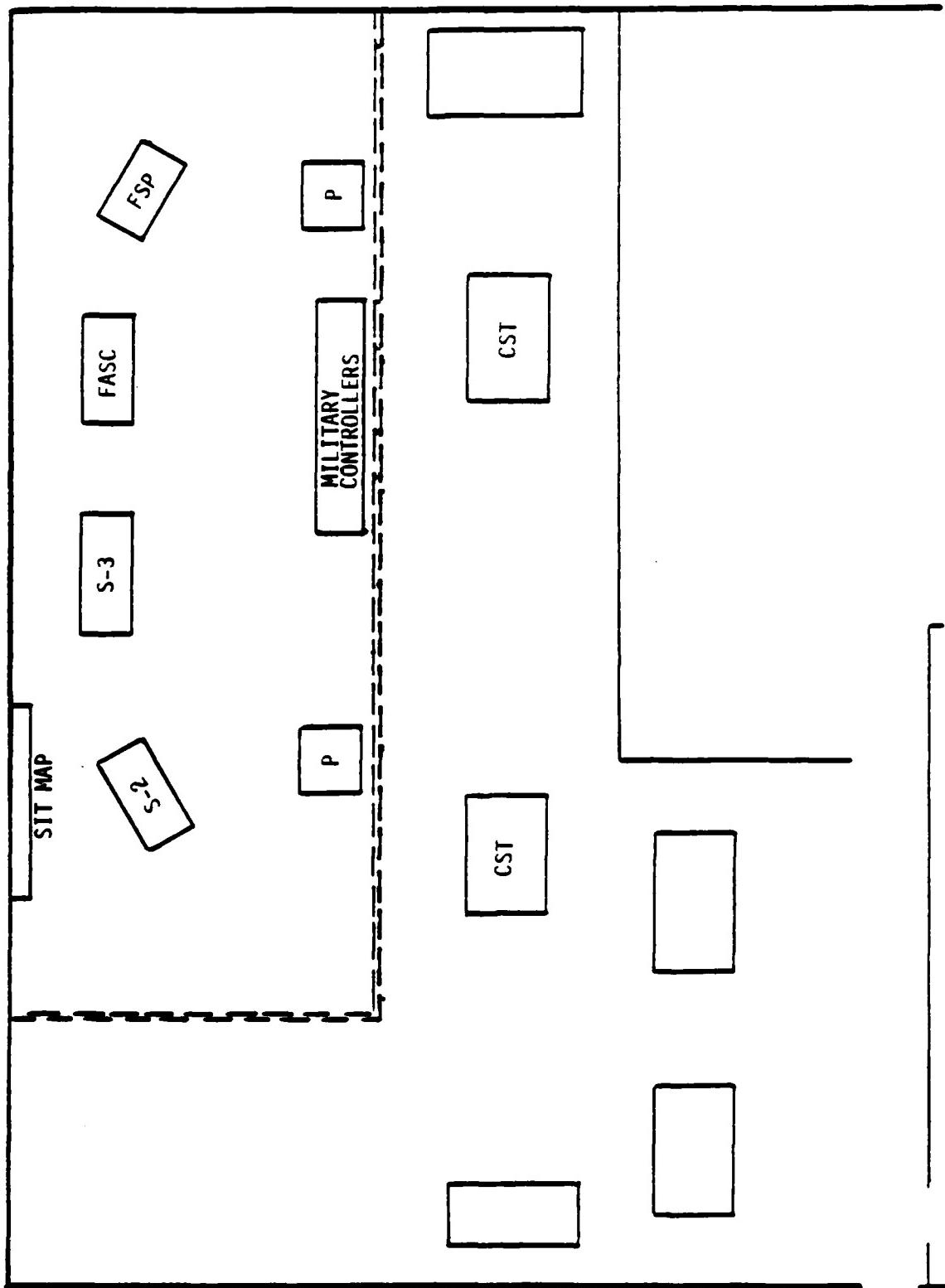


Figure 2-3. Test Facility Layout (A)

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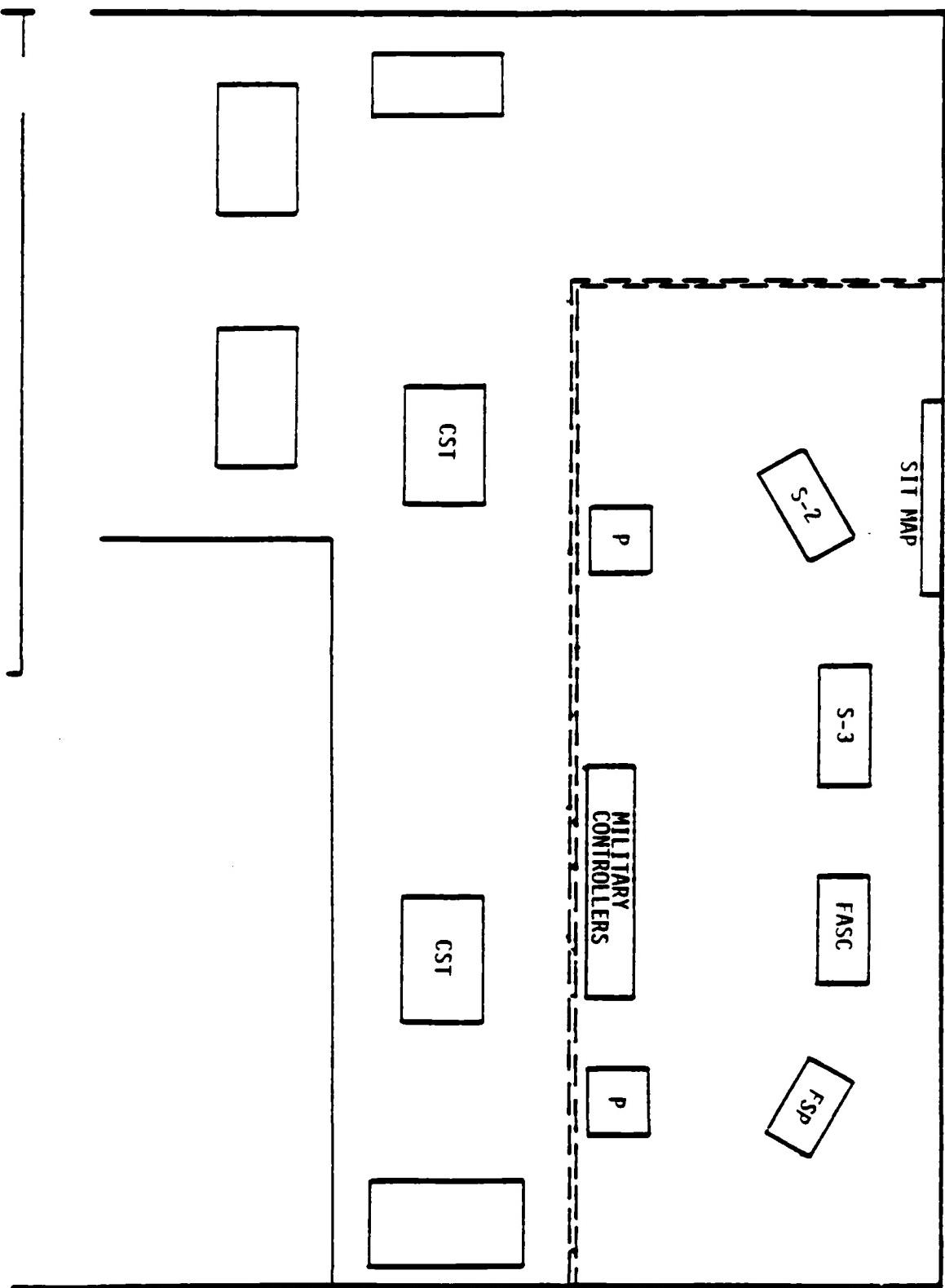


Figure 2-3. Test Facility Layout (A)

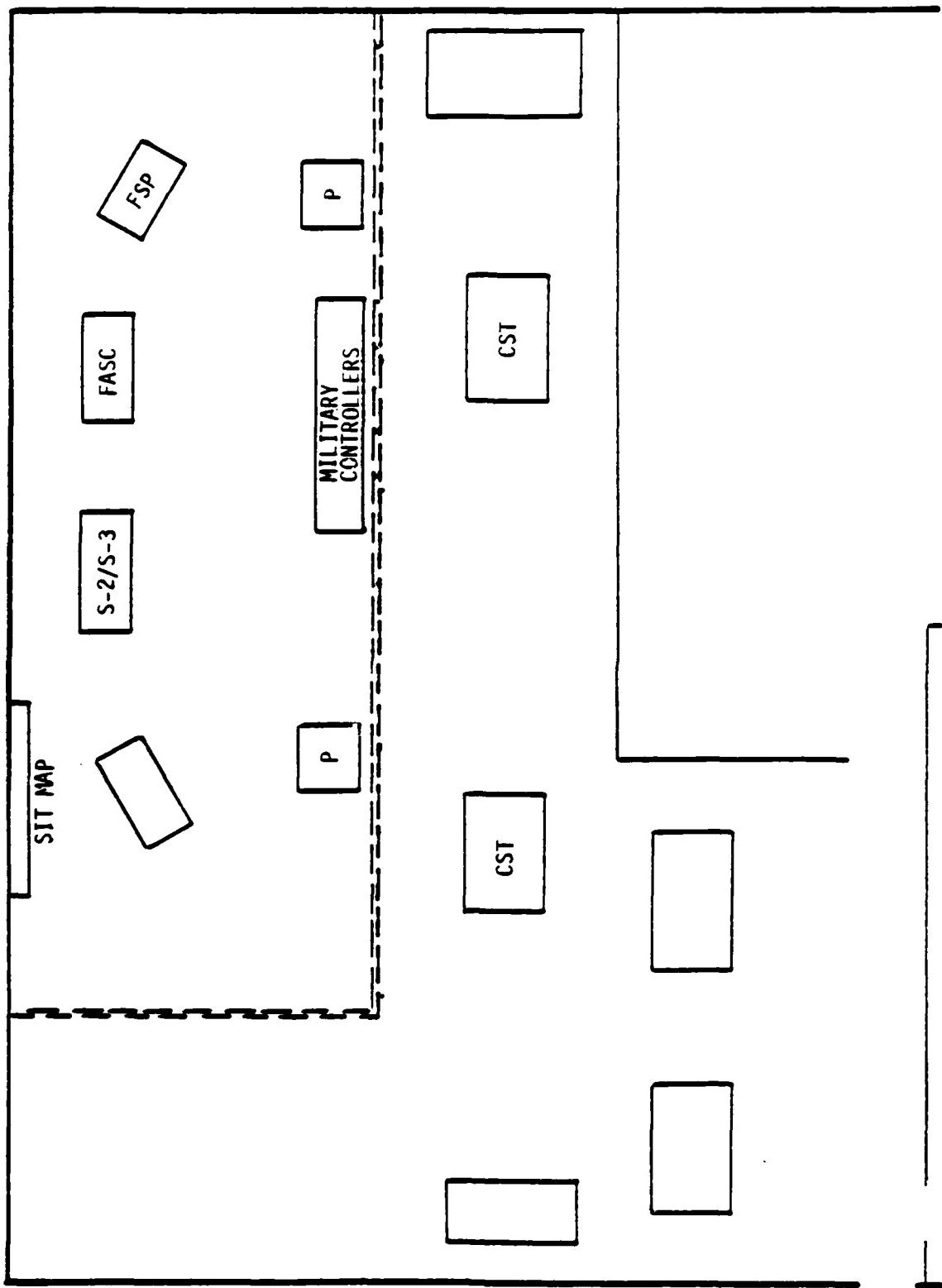


Figure 2-5. Test Facility layout (C)

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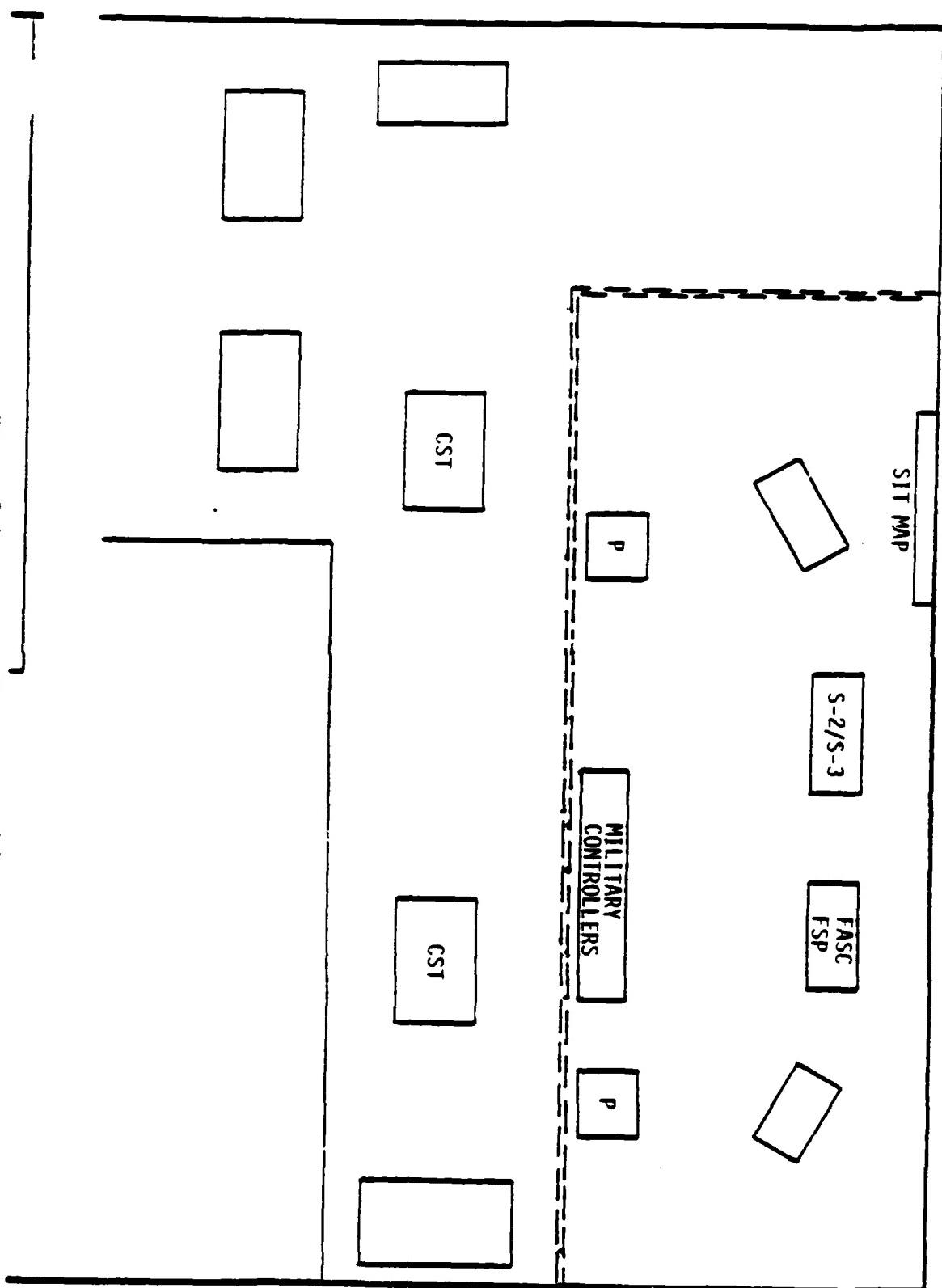


Figure 2-6. Test Facility Layout (n)

2.6 TRAINING

2.6.1 FMF Personnel

Training for FMF personnel will consist of a short MCTSSA orientation and instruction covering test purpose, test approach, and participant duties. This will be followed by a limited "hands on" practice run on a sample scenario using a specified work station mix. Each test participant team will conduct the practice run on a different mix. This training is to be conducted during the "Brief and Introduction" period shown on the daily schedule in paragraph 2.2.2. See appendix B for detailed training information.

2.6.2 MCTSSA Operator Personnel

MCTSSA enlisted system operators will be given an orientation briefing on test conduct and objectives. During "hands on" training on equipment, operators will be briefed on their test duties. See appendix B for detailed training information.

2.6.3 CST Personnel

Military and contractor personnel serving as controllers on CSTs will receive a briefing on test objectives, test duties, and test requirements prior to test rehearsal and pilot test. See appendix B for detailed training information.

SECTION 3
DATA MANAGEMENT

3.1 DATA SOURCES

Data will be collected and reduced for analysis and evaluation to support the test objectives. The data will be obtained from the automated GTF Journal Files (system and work station) and from the test participants.

3.2 DATA COLLECTION

3.2.1 Data Collection in Support of Objective One

3.2.1.1 MOP 1a

The data for this MOP will be evidence of the occurrence, prior to a specific limiting time, of a disapproval for a fire support request specified on the data collection form contained in appendix C.

Data will be collected by examination of the GTF Journal File for each work station in accordance with the procedures set forth in appendix C.

3.2.1.2 MOP 1b

The data for this MOP will consist of the time the fire order message is sent to the mortar tubes for each 81mm mortar call for fire.

The GTF Journal File for each work station will be examined to determine the time of transmission of firing data to the mortar platoon for each call for fire. The times will be entered on the appropriate data collection form in accordance with the procedures set forth in appendix C.

The GTF Journal File for each work station will be examined to determine the time of transmission of firing data to the mortar platoon for each call for fire. The times will be entered on the appropriate data collection form in accordance with the procedures set forth in appendix C.

3.2.2 Data Collection in Support of Objective Two

The data to be collected for objective two will be the occurrence in the work station journal of a message being passed to subordinate companies for each of the items of combat information specified in the data collection form contained in appendix C.

The GTF Journal File for each work station will be reviewed to determine the number of controlled items of combat information inserted by test planners that were passed to subordinate units. Five controlled items will be included in each test iteration. The data will be entered on the appropriate data collection form, in accordance with the procedures set forth in appendix C.

3.2.3 Data Collection in Support of Objective Three

The data collected for objective three will be the occurrence of a data base entry notation at the bottom of the messages specified on the data collection form contained in appendix C.

The incoming message file for each work station will be examined to determine if the messages specified in the data collection form have been designated for data base update. Messages will have been designated for data base update by the test participants.

3.2.4 Data Collection in Support of Objective Four

3.2.4.1 MOP 4a

The data for this MOP will consist of participant responses to multiple choice questions regarding work station utility as an information system. At the completion of each test iteration, test participants will be asked to complete the questionnaire contained in appendix C.

3.2.4.2 MOP 4b

The data for this MOP will consist of participant responses to work station direct comparison questions. At the completion of each test iteration, test participants will be asked to complete the questionnaire contained in appendix C.

3.2.4.3 MOP 4c

The data for this MOP will consist of the score from the Battlefield Perception Checklists contained in appendix C.

There are three checklists (I, II, III) which will be administered according to the following schedule.

CHECKLIST

<u>DAY</u>	<u>DATE</u>	<u>TEAM</u>	<u>MIX</u>	<u>CHECKLIST</u>
MON	19 OCT	1	A	I
TUE	20 OCT	1	C	II
TUE	20 OCT	1	D	III
THU	22 OCT	2	B	II
THU	22 OCT	2	A	III
FRI	23 OCT	2	C	I
MON	26 OCT	3	C	III

CHECKLIST (Continued)

<u>DAY</u>	<u>DATE</u>	<u>TEAM</u>	<u>MIX</u>	<u>CHECKLIST</u>
TUE	27 OCT	3	D	II
TUE	27 OCT	3	B	I
THU	29 OCT	4	D	I
THU	29 OCT	4	B	III
FRI	30 OCT	4	A	II

At a specified time during each test iteration, the action will "freeze." The test supervisor will then verbally ask each test participant the appropriate question for his billet from the battlefield perception checklist for the mix being used.

The test supervisor will evaluate each response by assigning the answer a score of 0, 1, or 2 based upon accuracy and completeness. Test participants will not be allowed to discuss answers among themselves nor will they be permitted to consult any notes or the video display. The test supervisor will then record the scores in the appropriate spaces on the checklist.

3.2.4.4 MOP 4d

The data for this MOP will consist of comments on structured interview issues.

Each test participant will be offered the opportunity to discuss issues concerning the effectiveness of the automated COC and its various configurations in areas such as: fire support requests, combat information, and information system efficiency.

3.3 DATA REDUCTION

For this test, a partial data reduction will take place after each iteration with a final reduction of data occurring after the test in accordance with procedures set forth in appendix C.

SECTION 4
DATA ANALYSIS

4.1 METHOD

Data analysis for objectives one through three is based on the following "factors": (1) work station mix, (2) test participant team, and (3) experimentation order. The test design for these objectives is a type III incomplete Latin square (see Cochran and Cox, Experimental Design, Wiley, 1957). Data analysis for objective four is based upon subjective test participant responses. Although subjective in nature, some of the responses will be quantified using the method of successive intervals (Glenn F. Lindsay, Naval Postgraduate School, "Categorical Judgements," Aug. 1976, unpublished) and paired comparisons (Glenn F. Lindsay, "On Constructing Interval Scales from Ordinal Judgements," July 1977, unpublished).

4.2 DATA ANALYSIS FOR OBJECTIVES ONE THROUGH THREE

4.2.1 Assumptions

It is assumed that the observations of a given measure obtained are independent and normally distributed, that all observations of a given measure have the same variance, and that the mean of each measure can be represented as a linear combination of certain unknown parameters. It is also assumed that any interaction effect between factors will be negligible.

4.2.2 Method

An analysis of variance based on the type III incomplete Latin square design will be used to test the hypothesis that the means of each measure are equal for all work station mixes. (See appendix D.) If the

hypothesis is rejected, Scheffe's method for multiple comparisons (see Guenther, Analysis of Variance, Prentice-Hall, '64) will be used to identify significant contrasts.

4.3 DATA ANALYSIS FOR OBJECTIVE FOUR

4.3.1 Assumptions

For the objective four MOPs (see paragraph 1.4.4) it is assumed that a test participant's unmediated perception of the utility of any particular work station mix c~ the degree to which that mix supports controlling, exploiting, or processing data as a scale value is normally distributed. It is also assumed that the test participants view the continuum of these scale values as being broken into categories, and that a test participant's perception about a category's upper bound is normally distributed.

It is further assumed that the perceptions have equal variances and equal correlation coefficients between work station mixes. Finally, the test participants are assumed to have an awareness of the combat situation. These cognitions, as measured by the Battlefield Perception Checklists, are assumed to be normally distributed, independent, and with equal variances.

4.3.2 Methods

Test participant responses to questionnaires will be quantified using the methods of successive intervals, paired comparisons, and analysis of variance (see appendix D, "Detailed Analysis").

4.3.2.1 MOP 4a

Each test participant will judge each work station mix as an entity unto itself and will be asked to use his own experience to judge a particular work station mix based on current FMF procedures which have no automated assistance.

Questions 1 through 4 on the End-of-Iteration questionnaire in appendix C, will be used for this analysis. The questions will be used to assess respectively:

- o The degree to which a mix supports controlling data
- o The degree to which a mix supports exploiting data
- o The degree to which a mix supports processing data
- o The overall utility of a mix as an information system

The responses will be quantified using the method of successive intervals. The steps to perform the analysis are contained in appendix D.

4.3.2.2 MOP 4b

Test participants will judge work station mixes relative to each other. Question five of End-of-Iteration questionnaire will be used for this analysis. The responses will be quantified using the method of paired comparisons. The steps for this method of analysis are contained in appendix D.

4.3.2.3 MOP 4c

An analysis of variance based on a two-factor, completely randomized, fixed-effects design (Guenther, Analysis of Variance, Prentice-Hall, 1964) will be used to test the hypotheses that (1) there are no differences in battlefield awareness among test participant billets, (2) there are no differences in battlefield awareness among work station mixes, and (3) there are no interactive effects (See appendix D).

4.3.2.4 MOP 4d

After each test participant team has completed all of its test iterations, a structured interview will be conducted during the debrief to elicit test participants' comments with respect to this MOP. These comments will be summarized and included in the test report.

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APPENDIX A
TEST SCENARIO AND SEQUENCE OF EVENTS

**APPENDIX A
TEST SCENARIO AND SEQUENCE OF EVENTS**

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APPENDIX A
TEST SCENARIO AND SEQUENCE OF EVENTS

A.1 INTRODUCTION

This scenario was developed to provide a realistic tactical situation of sufficient scope to exercise the major staff functions within a battalion Combat Operations Center. The sequence of events provides controlled inputs to sustain the desired level and type of activity for the test.

A.2 TEST SCENARIO

A.2.1 Background

In late September 1988, Communist (Red) forces initiated a combined air and ground attack in the country of Blue. The Red 1st and 2nd CAAs quickly defeated Blue ground forces in the southern portion of the country and succeeded in seizing all major oil fields and refineries. Blue forces in the north reacted immediately and positioned three divisions of the III Corps along the natural barrier formed by the Sierra Nevada, the Tehachapi, and Sierra Madre Mountains to block any move by Red forces into the southern San Joaquin Valley. (See figure A-1.)

In view of the rapid progress of the Red invasion, the United States elected to intervene directly, based on bilateral agreements reached years earlier with Blue. By 15 October 1988, eight U.S. Air Force tactical fighter squadrons, two U.S. Army divisions, and one MAF were airlifted into northern Blue. Concurrently, a Navy task force including two CVs established operating areas off the Blue coast.

On 15 November, another USMC MAF would be committed to seize a lodgement through which an Army mechanized corps would move by D+15.

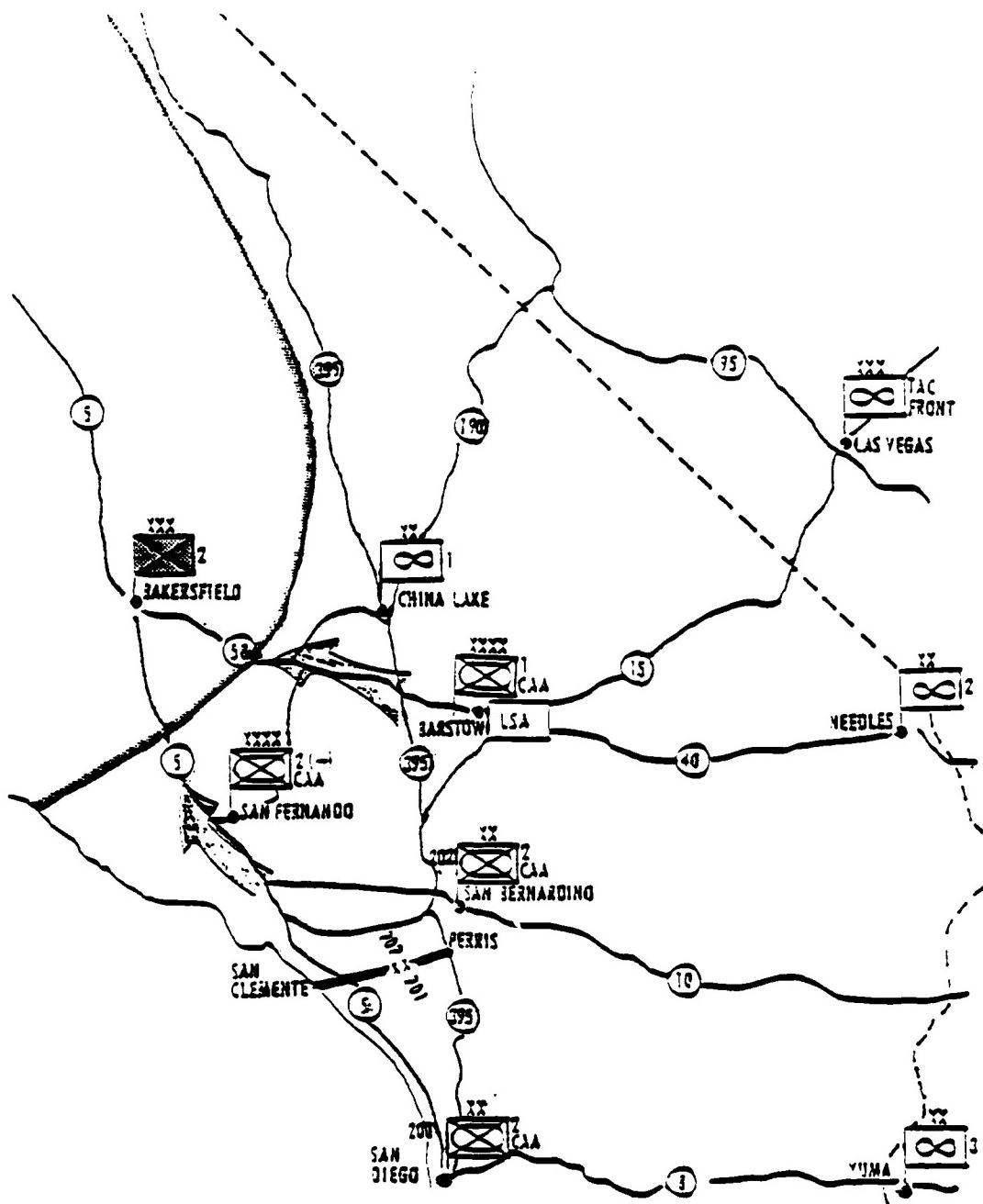


Figure A-1. Enemy Disposition Southern Blue

When established ashore, the mechanized corps would commence operations against the rear of the 1st and 2nd CJAs in coordination with a combined attack by U.S./Blue forces located north of Los Angeles. It was anticipated that this threat would cause Red forces to withdraw toward their own borders in the east.

It was determined that the sparsely populated coastal area between Oceanside and San Clemente would satisfy the terrain requirements for a lodgement area that permitted the dispersal of a follow-on force of corps size until it was ready to assume the offensive. Landing force objectives included the port and air facilities and the control of all critical terrain and LOCs within the lodgement. (See figure A-2.)

The 201st MRD of the 2nd CAA was given the responsibility for defending the southern coastal region from Capistrano Beach south to San Ysidro. This division is equipped with a wide range of sophisticated weapons and with BMPs for mobility. The large area of responsibility, which included the major population center of San Diego, precluded the establishment of static defense positions. The 201st has established its headquarters in San Diego, and has assigned its subordinate 21st MRR to control this large urban complex and to defend the port facility. The 22nd and 23rd MMRs have been given the responsibility for conducting a mobile defense of the northern sector. Basic defensive doctrine, if faced with a superior force, called for a series of delaying actions until reinforcement could be accomplished, and then to counterattack with armor supported by artillery. A forward command element of the 201st MRD located its headquarters in Escondido to coordinate this effort. Disposition of enemy forces prior to D-Day is depicted in figure A-3.

At 0600 on 15 November, I MAF initiated a combined surface and heliborne assault in the vicinity of Oceanside as scheduled. Enemy forces, as intelligence had predicted, fought delaying actions while steadily giving ground. This practice continued until D+5 when

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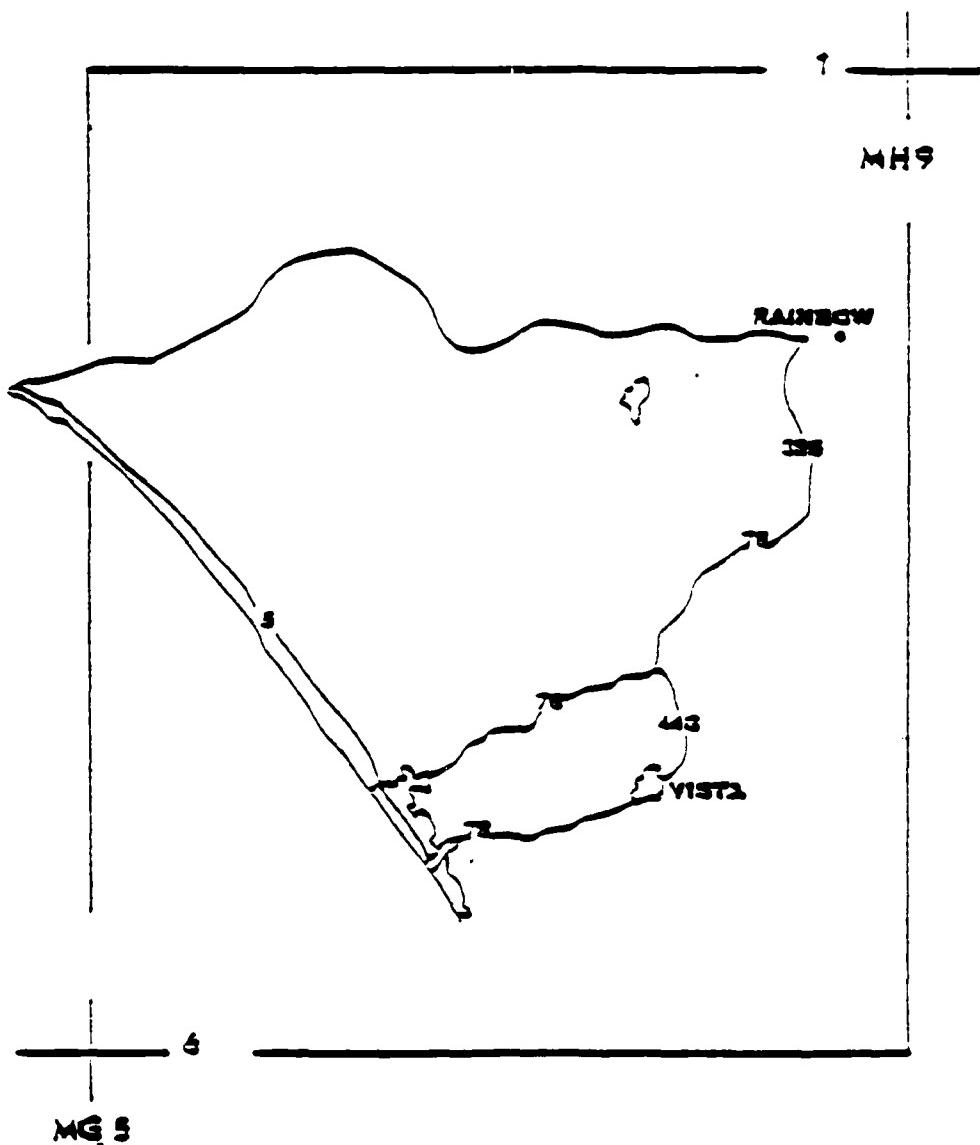


Figure A-2. Lodgement Area

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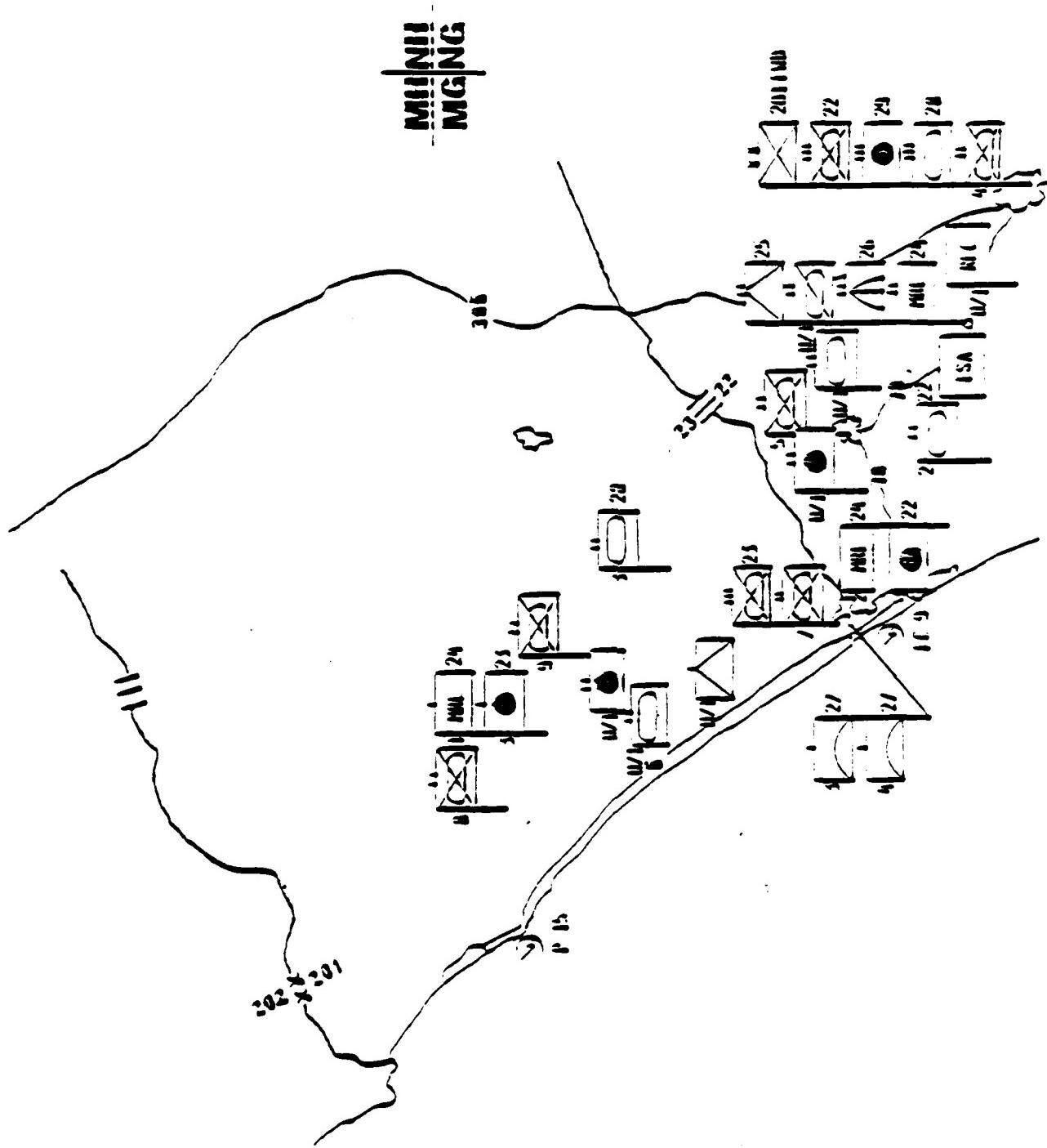


Figure A-3. Disposition of Enemy Forces Prior to Day (Sheet 1 of 2)

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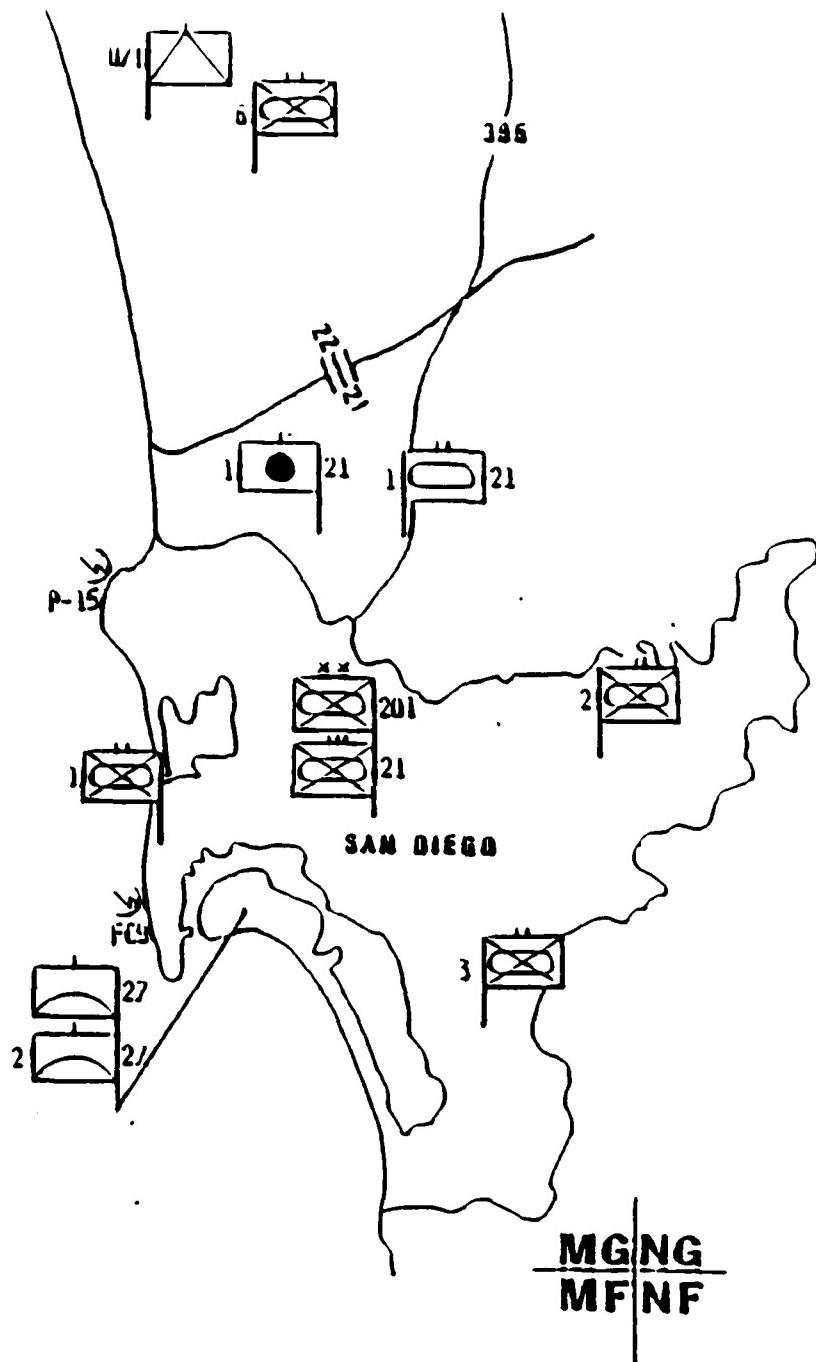


Figure A-3. Disposition of Enemy Forces
Prior to D-Day (Sheet 2 of 2)

resistance suddenly increased in the southern and eastern sectors of the lodgement. Enemy units continued to practice economy of force rather than being drawn into a decisive engagement. The 201st MRD, recognizing the serious threat posed by I MAF, had requested immediate reinforcement and tactical air support. The 301st MRD of the 3rd CAA in the Lake Tahoe area commenced movement to the south and was expected to reinforce on or about 27 November.

On D+9, MIG-25 photo aircraft escorted by MIG-23s were detected during high speed passes over the objective area. These aircraft were tracked on radar and noted returning toward the Red border. These sightings coupled with all source intelligence indicated that the landing force would be subjected to enemy air attacks in the immediate future. Current enemy AOB reflected two ground attack squadrons and one fighter squadron operating from the air field in El Centro. Proximity of this capability to the lodgement gave the enemy the ability to conduct air strikes with virtually no warning.

A.2.2 General Situation

By D+10 (25 November 1988), all major combat and combat support elements of the I MAF had been established ashore. The northern and southern boundaries of the lodgement were under control of the 5th and 1st Marines, respectively. The 5th Marines had met only light resistance in the northern sector. The 1st Battalion had assumed defensive positions on the critical terrain which controlled movement on Hwy 5. The remainder of the regiment was being held as the Division Reserve. The 1st Marines to the south, although meeting moderate to heavy resistance, had succeeded in taking the high ground overlooking Hwy 78. All attempts to move across Hwy 78 had been unsuccessful and were met with strong reaction by elements of the 22nd MRR supported by heavy artillery concentrations. Although enemy forces had been subjected to repeated air strikes, they appeared determined to contain and hold the 1st Marines north of Hwy 78. To the east, the 7th Marines, after seizure of

the high ground above Lake O'Neil, met increased resistance. The 23rd MRR had fought a series of delaying actions, falling back to defensive positions east of Fallbrook. Reconnaissance patrols reported that enemy units were preparing fixed defensive positions to the east of Fallbrook along routes leading to Hwy 395. The 23rd MRR and supporting armor had suffered moderate casualties and equipment losses from continuous artillery and air strikes supporting the 7th Marines.

Interrogation of prisoners taken in this area indicated that the 23rd MRR had been ordered to "hold Hwy 395 open at all costs." These prisoners stated, "A reinforcing armored column is enroute south." Special intelligence corroborated those interrogation reports and identified the reinforcing column as subordinate to the 301st MRD. Recent aircraft emplaced sensor readouts indicated heavy vehicular activity in the vicinity of Perris and Elsinore. These indicators clearly showed enemy forces were preparing to initiate extensive efforts to counter the threat posed by the landing force.

Based on this information and recognizing that control of Hwy 395 within the lodgement area was essential to successful achievement of the MAF mission, CLF ordered the immediate continuation of the attack and destruction of the remaining forces in the eastern sector of the lodgement area and the establishment of blocking positions along Hwy 395. The 3rd MAW was directed to concentrate its primary strike efforts in support of this attack. All-weather fighter aircraft maintained constant cover to counter the anticipated enemy air threat.

The MAF C-2 directed the immediate insertion of force reconnaissance teams to observe and report enemy activities. Of primary concern was the area in the vicinity of the junction of Hwy 71 and Hwy 395 north of Temecula, and south of the junction of Hwy 76 and Hwy 395 toward Escondido.

A.2.3 7th Marines Mission

The 7th Marines Commander, tasked with execution of the attack and seizure of Division Objective 5, established H-Hour for 0700 on 26 November 1988. Based on the composition of the enemy force, the 7th Marines was provided with additional armor and anti-tank assets. An artillery battalion was placed in direct support of the attack. Plans called for four AH-1T gunships to arrive on station at H-30 for preplanned and on-call missions.

The concept of operations called for the simultaneous attack of two reinforced infantry battalions on line. The 2nd Battalion, 7th Marines, located on the eastern boundary of the city of Fallbrook, would advance along the axis of East Mission Road leading to Hwy 395. The 1st Battalion, 7th Marines to the south, would advance along roadways leading toward Live Oak Park and the approaches to Hwy 395. The 3rd Battalion, 7th Marines is regimental reserve and is prepared to support either of the assault battalions as required. Preparatory fires would commence at H-25 and continue until directed to be lifted by assault elements as they reach their initial objectives.

To provide flank security, Company C, 1st Reconnaissance Battalion, would establish a series of observation posts overlooking Hwy 76, to include its junction with Hwy 395.

The afternoon and evening of 25 November was devoted to correcting any logistic and personnel shortfalls within the regiment. Movement of units to the assigned assembly areas behind the line of departure would be accomplished under cover of darkness. Guides familiar with the terrain would be utilized to direct assault elements to assigned position. Radio communications during the movement would be held to an absolute minimum. Harassing and interdiction fires would be increased during this time to cover the movement of forces to the LOD.

7th Marines (REIN) Task Organization

7TH MARINES HQ

HQ CO, 7TH MARINES

DET, COMM CO, 7TH MARINES

19TH ITT.

2ND ASRT

2ND PLT (-), 3RD FAAD

B CO (-), 3RD ASLT AMPH BN

C CO (-), 1ST TK BN

C CO (-), 1ST CBT ENG BN

2ND PLT (-), 1ST AT CO

C CO, 1ST RECON BN

A CO, MOTOR BN, FSSG

1ST BN (REIN), 7TH MARINES

1ST BN HQ

H&S CO, 1/7

1ST PLT, C CO, 1ST CBT ENG BN

1ST SECT, (-), 2ND PLT, 1ST AT CO

1ST SECT, 2ND PLT, 3RD FAAD

A CO (REIN)

1ST SECT, AT PLT, WPNS CO

1ST SQD, 1ST SECT, 2ND PLT, 1ST AT CO

1ST TEAM, ASLT SQD, WPNS CO

1ST PLT, B CO, 3RD AMPH BN

TACT

B CO

2ND SECT, AT PLT, WPNS CO

2ND SQD, 1ST SECT, 2ND PLT, 1ST AT CO

LT SECT, 1ST PLT, C CO, 1ST TK BN

2ND TEAM, ASLT SQD, WPNS CO

2ND PLT, B CO, 3RD ASLT AMPH BN

TACT

C CO (REIN)

1ST PLT, B CO, 3RD ASLT AMPH BN
3RD SQD, 1ST SECT, 2ND PLT, 1ST AT CO
3RD SECT, AT PLT, WPNS CO
TACT

WPNS CO (-)

81 MM PLT
AT PLT (-)
ASLT SQD (-)

2ND BN (REIN), 7TH MARINES

2ND BN HQ

H&S CO, 2/7
2ND PLT, C CO, 1ST CBT ENG BN
2ND SECT (-), 2ND PLT, 1ST AT CO
2ND SECT, 2ND PLT, 3RD FAAD

E CO (REIN)

1ST SECT, AT PLT, WPNS CO
1ST SQD, 2ND SECT, 2ND PLT, 1ST AT CO
2ND PLT, C CO, 1ST TK BN
1ST TEAM, ASLT SQD, WPNS CO
3RD PLT, B CO, 3RD ASLT AMPH BN
TACT

F CO (REIN)

2ND SECT, AT PLT, WPNS CO
2ND SQD, 2ND SECT, 2ND PLT, 1ST AT CO
3RD PLT, C CO, 1ST TK BN
2ND TEAM, ASLT SQD, WPNS CO
4TH PLT, B CO, 3RD ASLT AMPH BN
TACT

G CO (REIN)

3RD SECT AT PLT, WPNS CO
3RD SQD, 2ND SECT, 2ND PLT, 1ST AT CO
TACT

WPNS CO (-)

81 MM PLT

AT PLT (-)

ASLT SQD (-)

3RD BN (REIN), 7TH MARINES

3RD BN HQ

H&S CO, 3/7

3RD SECT (-), 2ND PLT, 1ST AT CO

3RD SECT, 2ND PLT, 3RD FAAD

I CO (REIN)

1ST SECT, AT PLT, WPNS CO

1ST AND 2ND SQDS, 3RD SECT, 2ND PLT, 1ST AT CO

TA CT

K CO (REIN)

2ND SECT, AT PLT, WPNS CO

3RD AND 4TH SQDS, 3RD SECT, 2ND PLT, 1ST AT CO

TA CT

L CO (REIN)

AT PLT (-), WPNS CO

ASLT SQD, WPNS CO

3RD PLT, C CO, 1ST CBT ENG BN

TA CT

WPNS CO (-)

81 MM PLT

Artillery Support

1ST BN, 11TH MARINES
(3 BTRY'S 155 MM)

DIRECT SUPPORT

4TH BN, 11TH MARINES
(2 BTRY'S 155 MM (SP))
(2 BTRY'S 8" HOW (SP))

A.2.4 Enemy Situation

The sudden build-up of U.S. forces in northern Blue, followed by the I MAF amphibious assault, was viewed with concern by Red military leaders. With their forces being held below the passes leading into the southern San Joaquin Valley and the rapid movement inland by amphibious forces, it was apparent that a major effort must be made to drive U.S. forces out of the lodgement if defensive objectives were to be accomplished. Intelligence sources confirmed that a U.S. mechanized unit was enroute to Blue and could be expected to land at any time. The 301st MRD, which had been withdrawn from the Lake Tahoe area, moved south at best possible speed under cover of darkness, and by early morning of 25 November the lead elements of the motorized regiment and tank battalion arrived at Lake Elsinore. An additional MRB and artillery battery were located in Perris.

During the late evening of 25 November, the 201st MRD commander, concerned over the weakened conditions of the 23rd MRR and increased U.S. activity in the vicinity of Fallbrook, requested these reinforcing columns be committed immediately. This request was approved, and it was estimated they would be able to begin reinforcement by midday on the 26th of November, provided sufficient air cover could be flown to counter the U.S. air threat.

The 3rd Air Division was designated to coordinate air activities. The 201st MRD was informed that the 10th Ground Attack Regiment in El Centro and the 11th Fighter Regiment from Yuma would be assigned to support ground actions commencing at 1200 on 26 November at the earliest. Prior to this time, all air assets were committed to support of Red forces to the north.

Based on this information, the enemy commander planned to commence a series of attacks at 1300 on 26 November. The previously uncommitted

1st Tank Battalion of the 21 MRR was ordered to proceed north on Hwy 395 immediately and report to the OPCON of the 23rd MRR by no later than 0900 on 26 November.

Weather permitting, a helo-lift of four 122 mm guns would commence at 0745. These weapons would be delivered to the 29th Artillery Battalion in the vicinity of Rancho San Luis Rey to replace artillery pieces which had been destroyed by U.S. air strikes. Three MI-24 gunships were assigned to escort this lift. Upon completion of the escort mission, these gunships would be on call to support enemy ground forces operating east of Fallbrook. Realizing the reinforcing units were unfamiliar with the terrain, the 201st MRD commander directed the 23rd MRR to provide guides for these columns. To satisfy this requirement, a platoon from the reconnaissance battalion was sent north to meet the reinforcing columns at the junction of Hwy 395 and Hwy 71 and provide assistance as directed.

A.2.5 2nd Battalion, 7th Marines Mission

(See overlays.)

At h-hour advance at best speed and by fire and maneuver neutralize remaining enemy forces in assigned zone of action. By no later than 1130 on 26 November seize Regimental Objective 1 and establish anti-mechanized barrier denying use of Hwy 395 to enemy units moving from the north.

A.2.6 Enemy Disposition within 2/7 Zone of Action

(See overlays.)

Analysis of all source intelligence indicates the 9th Motorized Rifle Battalion of the 23rd Motorized Rifle Regiment has established a

series of defensive positions blocking likely avenues of approach to Hwy 395. Aerial photography taken in the late afternoon of 25 November clearly shows a defended area consisting of fortified positions located at MG80759505, MG80809495, and MG80809450. Two BMP AFVs can be identified at each of these positions. Seven T-72s are located in the vicinity of MG81409492. Only four of these tracked vehicles appear fully operational. The other three tanks are believed only capable of providing supporting fires for this defensive complex. Composition of these enemy elements indicates this complex is defended by the equivalent of a motorized rifle company supported by an understrength company of medium tanks.

Additional roadblocks are located at MG80759320 and MG80809350. These positions are believed manned by remnants of a motorized rifle company. Only 4 BMP AFVs and 1 T-72 tank can be identified from photos of the area.

A usually reliable intelligence source reported the 9th Motorized Rifle Battalion Command Post and a small reserve force were located in the vicinity of MG822945. Photography adds validity to this report. A defensive position is located at MG82109445. Three BMP AFVs can be identified in this area and a suspected mortar position is located at MG82659445.

It is estimated that this battalion's strength has been seriously degraded and no additional reinforcements are locally available. Based on available information it seems apparent these defensive positions represent the 9th MRB's total capability.

A.2.7 2nd Battalion, 7th Marines Concept of Operations

(See overlays.)

At H-15 Golf Company will initiate a heliborne assault into LZ Buzzard and immediately move at best speed to secure Battalion Objective 1. LZ prep fires will commence at H-25. At H-15 preparatory fires will commence on the remainder of designated targets and continue until assault units direct that they be lifted.

At H-hour Echo and Foxtrot Companies will initiate a motorized infantry assault on Battalion Objective 2 and Battalion Objective 3 within their respective zones of action. Infantry will dismount LVTs at Phase Line Apple and continue the advance on foot. Golf Company will provide target information from its vantage point and fire support from the flank with its organic weapons.

Upon the neutralization of enemy forces on Battalion Objective 2, Echo Company will continue the attack to seize Battalion Objective 4. During this advance, Golf Company will helilift into LZ Vulture and secure Battalion Objective 5. Golf Company will then provide fire support to Echo Company until Battalion Objective 4 is secured. After Battalion Objective 4 is secured, provide fire support to Foxtrot Company as required.

Once Battalion Objective 3 is secured, Foxtrot Company will continue the assault to seize Battalion Objective 6. Upon seizure of Battalion Objective 6, establish blocking position to cut off retreating enemy units.

After organized resistance in the vicinity of Battalion Objective 4 ceases, Echo Company consolidates forces and establishes an anti-mechanized barrier on Regimental Objective 1.

The 2nd Battalion, 7th Marines Combat Operations Center is now tasked with assisting the commander in monitoring and analyzing the ground combat situation and controlling ground maneuver and fire support.

-0- 252245H

FROM: SEVENTH MARINES
TO: ONE-SEVEN
TWO-SEVEN
THREE-SEVEN
ONE-ELEVEN
INFO: CG, FIRST MAR DIV
BT

7TH MARINES FRAGORD 10-88

1. SITUATION: SEE CURRENT INTSUM'S.
2. MISSION: 7TH MARINES (REIN) SEIZE, OCCUPY, AND DEFEND DIVISION OBJECTIVE 5. BE PREPARED ON ORDER TO SEIZE REMAINDER OF LODGEMENT AREA WITHIN ASSIGNED ZONE OF ACTION.
3. EXECUTION: 7TH MARINES (REIN) ATTACK WITH TWO BATTALIONS ABREAST. TWO-SEVEN ON LEFT ATTACK ALONG AXIS OF EAST MISSION ROAD CLEARING ALL ENEMY BLOCKING POSITIONS. ESTABLISH DEFENSIVE POSITIONS UPON OCCUPATION REGIMENT OBJECTIVE 1 AND BE PREPARED TO COUNTER ENEMY MOVEMENT FROM THE NORTH ALONG HWY 395. ONE-SEVEN ON THE RIGHT ATTACK ALONG AXIS OF LIVE OAK ROAD CLEARING ALL ENEMY BLOCKING POSITIONS. ESTABLISH DEFENSIVE POSITIONS AFTER OCCUPATION REGIMENTAL OBJECTIVE 2 AND BE PREPARED TO COUNTER ENEMY MOVEMENT FROM THE SOUTH ALONG HWY 395. ONE-ELEVEN IN DIRECT SUPPORT FROM CURRENT POSITIONS. C CO, 1ST RECONNAISSANCE BATTALION ESTABLISH RECONNAISSANCE SCREEN ALONG HWY 76 FOR EARLY DETECTION OF ENEMY ACTIVITY ALONG SOUTHERN FLANK. THREE-SEVEN (REGIMENT RESERVE) FOLLOW IN TRACE OF TWO-SEVEN ON ORDER. BE PREPARED FOR OPERATIONS IN ZONE OF ACTION OF EITHER ATTACK BN.
H-HOUR IS 260700H.
4. ADMIN AND LOGISTICS: IAW SOP.
5. COMMAND SIGNAL: IAW SOP. REGIMENT CP LOCATED AT MG742921.

-0- 260145H

FROM: TWO-SEVEN
TO: ECHO-TWO-SEVEN
FOXTROT-TWO-SEVEN
GOLF-TWO-SEVEN
WEAPONS-TWO-SEVEN
INFO: SEVENTH MARINES
BT

TWO-SEVEN FRAGORD 17-88

1. SITUATION: SEE CURRENT INTEL REPORTS.
2. MISSION: 2ND BATTALION, 7TH MARINES (REIN) SEIZE, OCCUPY, AND DEFEND REGIMENT OBJECTIVE 1.
3. EXECUTION: AT H-15 GOLF COMPANY INITIATE A HELIBORNE ASSAULT INTO LZ BUZZARD AND IMMEDIATELY MOVE AT BEST SPEED TO SECURE BATTALION OBJECTIVE 1. UPON SECURING BATTALION OBJECTIVE 1, GOLF COMPANY WILL PROVIDE TARGET INFORMATION AND FLANKING FIRE SUPPORT, USING ORGANIC WEAPONS, TO ECHO COMPANY. COMMENCING AT H-HOUR, ECHO AND FOXTROT COMPANIES INITIATE A MOTORIZED ASSAULT ON BATTALION OBJECTIVES 2 AND 3 WITHIN RESPECTIVE ZONES OF ACTION. INFANTRY WILL DISMOUNT LVT'S AT PHASE LINE APPLE AND CONTINUE ASSAULT ON FOOT. UPON NEUTRALIZATION OF ENEMY FORCES IN BATTALION OBJECTIVE 2, ECHO COMPANY CONTINUE ASSAULT AND SEIZE BATTALION OBJECTIVE 4. SUBSEQUENT TO ECHO COMPANY'S SEIZURE OF BATTALION OBJECTIVE 2, GOLF COMPANY HELILIFT INTO LZ VULTURE AND SEIZE BATTALION OBJECTIVE 5. PROVIDE FLANKING FIRE SUPPORT TO ECHO COMPANY UNTIL BATTALION OBJECTIVE 4 IS SECURED. PROVIDE FIRE SUPPORT TO FOXTROT COMPANY AS REQUIRED. UPON SEIZURE OF BATTALION OBJECTIVE 3, FOXTROT COMPANY CONTINUE ASSAULT AND SEIZE BATTALION OBJECTIVE 6. SUBSEQUENT TO SEIZURE OF BATTALION OBJECTIVE 6 ESTABLISH BLOCKING POSITIONS TO CUT OFF RETREATING ENEMY UNITS. UPON SEIZURE OF BATTALION OBJECTIVE 4, ECHO COMPANY CONSOLIDATE FORCES AND ESTABLISH ANTI-MECH BARRIER IN REGIMENTAL OBJECTIVE 1. H-HOUR IS 260700H. ONE-ELEVEN WILL PROVIDE DIRECT SUPPORT ARTY FIRES.
4. ADMIN AND LOGISTICS: IAW SOP.
5. COMMAND AND SIGNAL: IAW SOP. BATTALION CP LOCATED AT MG76959360.

BASE LINE SEQUENCE OF EVENTS

H-15 TO H+1:45 NOV 26, 1981 (PLRS REPRESENTED BY REAL TIME SYMBOL MOVEMENT ON ALL DSD'S)

		ACTION REQUIRED AND WORK STATION DISPLAY
S-2	FASC	<p>Ø645 S-2 - CONTROL MEASURES OVERLAY WITH LZ AND BN OBJECTIVES.</p> <p>FRIENDLY UNIT LOCATIONS. ENEMY OOB.</p> <p>S-3 - CONTROL MEASURES OVERLAY WITH LZ AND BN OBJECTIVES. FRIENDLY UNIT LOCATIONS. ENEMY OOB.</p> <p>FASC - FRIENDLY UNIT LOCATIONS AND CONTROL MEASURES. FLIGHT PROFILE FOR G/2/7 1,1 FTR ON BSD. 81MM MTR POSITIONS AND FIRE ARCS ON DSD.</p> <p>TGT NUMBERS AND LOCATION FOR PREP FIRES ON OSD.</p> <p>TGP DATA AVAIL ON TEXT TERMINAL.</p> <p>FLIGHT PROFILES FOR CAS, AH-1T AND OV-10.</p>
Ø645	S-3	<p>Ø645 G/2/7 COMMENCES HELO ASSAULT INTO LZ BUZZARD. E/2/7 AND F/2/7 IN POSITION AT L.O.D.</p>
		<p>Ø645 PRE-PLANNED FIRE SUPPORT COMMENCES ON DESIGNATED TGT'S (ARTY AND CAS). AH-1T AND OV-10 A/C ON STATION.</p>

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(Sheet 1 of 3)

BASE LINE SEQUENCE OF EVENTS (Continued)

S-2	S-3	FASC	ACTION REQUIRED AND WORK STATION DISPLAY
Ø65Ø AO'S RPT BDA&	Ø65Ø AO'S RPT BDA&	Ø65Ø RO'S RPT BDA&	Ø65Ø S-2 - S-2 RECORD CHANGES; IN ENEMY CAPABILITY IF NECESSARY.
Ø65Ø	Ø65Ø AO'S CALL FOR FIRES ON TGT'S PREVIOUSLY FIRED UPON.	Ø65Ø AO'S CALL FOR ADDITIONAL FIRES ON TGT'S PREVIOUSLY FIRED UPON.	Ø65Ø FASC - REVIEW AND APPROVE OR DENY.
Ø65Ø INTEL SPOTREP (POSSIBLE AIR THREAT).	Ø65Ø	Ø65Ø PREP FIRES CONTINUE TO INCLUDE SMOKE.	Ø65Ø S-2 - INFORM S-3 AND FASC OF POSS AIR THREAT. FASC - TGT NUMBERS AND LOCATION FOR SMOKE ON DSD.
Ø65Ø	Ø65Ø G/2/7 REPORTS NO OPPOSITION VIC LZ BUZZARD OR BN OBJ-1.	Ø65Ø PAAD WPN CONTROL CONDITION (WPNS TIGHT).	Ø65Ø FASC - FAAD WPN CONTROL CONDITION ON DSD.
Ø7ØØ ASSAULT ELEMENTS CROSS L.O.D.	Ø7ØØ ASSAULT ELEMENTS CROSS L.O.D.	Ø7ØØ ASSAULT ELEMENTS CROSS L.O.D.	Ø7ØØ REAL TIME MOVEMENT OF FRIENDLY UNITS COMMENCE ON ALL DSD'S.
Ø7ØØ SENSOR READ-OUT (HEAVY VEHICULAR ACTIVITY VIC LAKE ELSINORE).	Ø7ØØ 3/7 (REGT'L RESERVE) TO FOLLOW 150MM IN TRACE OF 2/1.	Ø7ØØ MTR SECTION WITH G/2/7 READY TO FIRE.	Ø7ØØ S-2 - INFORM S-3 AND FASC FASC - TUBE POSITION; FIRE PAN ON RSP.
Ø7ØØ SHELL REP (G/2/7) RCVG MTR FIRE.	Ø7ØØ E/2/7 AND F/2/7 AT PHASE LINE APPLIE.	Ø7ØØ , Ø7ØØ SHELL REP (G/2/7) RCVG MTR FIRE.	Ø7ØØ S-3 - CHECK ENEMY SIT'N MAP - REQ FASC TGP MTR POSITION.

A-20

Enclosure (3)

BASE LINE SEQUENCE OF EVENTS (Continued)

S-2	S-3	FASC	ACTION REQUIRED AND WORK STATION DISPLAY
$\phi 7\phi 7$			$\phi 7\phi 7$ FASC - INSURE ALL FIRING UNITS CEASE PREP FIRES.
$\phi 7\phi 7$	$\phi 7\phi 7$ ASSAULT ELEMENTS REQ RCV PREP FIRES BE LIFTED.	$\phi 7\phi 7$ ASSAULT ELEMENTS REQ PREP FIRES BE LIFTED.	
$\phi 7\phi 9$	$\phi 7\phi 9$ ASSAULT ELEMENTS MAKE INITIAL CONTACT WITH ENEMY OUTPOSTS.	$\phi 7\phi 9$ E/2/7 TACT REQ 81MM MTR FIRE MISSION.	$\phi 7\phi 9$ FASC - F/2/7 FIRE MISSION NUMBER AND TGT LOCATION ON DSD. FASCO APPROVES AND GUN TGT LINES FROM TUBES ASSIGNED APPEAR ON DSD. FIRE COMMAND XMITTED TO FIRING UNIT.
$\phi 711$	G/2/7 REPORTS BMP DESTROYED BY TOW.	$\phi 711$ G/2/7 REPORTS BMP DESTROYED BY TOW.	$\phi 711$ S-2 - ADJUST ENEMY CAPABILITY FILES.
$\phi 712$		$\phi 712$ TGT INFO REPORTS (PREP FIRES).	$\phi 712$ FASC - REVIEW AND PROVIDE S-2 WITH BDAZ.
$\phi 713$	LEAD TANK WITH E/2/7 HIT BY SAGGER (1 KIA, 2 WIA).	$\phi 713$ LEAD TANK WITH E/2/7 HIT BY SAGGER (1 KIA, 2 WIA).	$\phi 713$ FASC - MEDEVAC SYMBOL ON DSD. FASCO REVIEW TEXT OF REQ. FLIGHT PROFILE OF MEDEVAC HELO ON DSD AFTER DIV BASIC CLEARS REQUEST.
			S-3 - DECREMENT FRIENDLY EQUIP STATUS.
			S-2 - CHECKS A ⁿ -5 POSITION AGAINST ROB HOLDINGS.

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Enclosure (3)

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BASE LINE SEQUENCE OF EVENTS (Continued)

S-2	S-3	FASC	ACTION REQUIRED AND WORK STATION DISPLAY
Ø715 INTEL SPOTREP (LOCATION OF ENEMY ARTY POSITIONS).	Ø715	Ø715 EOM F/2/7 81MM MTR MISSION RDS SHOT MSG. MSN SUMMARY FROM FO.	Ø715 FASC- 81MM MTR GUN TGP LINES OFF DSD FIRE UNIT CAPABILITY DECREMENTED BY QTY 81MM RDS; EXPENDED. S-2 - INFORM S-3 OF SPOTTED S-3 - REQ FASC INSURE ACY POSITIONS TARGETTED.
Ø716 SHELL REP (F/2/7 RCVG SUSPECTED ARTY FIRE).	Ø716	Ø716 E/2/7 TACT REQ 81 MTR FIRE MISSION. G/2/7 TACT REQ 81 MTR FIRE MISSION.	Ø716 FASC- E/2/7 AND G/2/7 FIRE MISSION NUMBER; AND TGP LOCATIONS ON DSD. FASCO REVIEW APPROVE AND ASSIGN TUBES. GUN TGP LINES FROM TUBES ASSIGNED APPARAK ON DSD. FIRE COMMAND; XMITTED TO FIRING UNITS.
Ø718	Ø718	Ø718 F/2/7 REQ CAS (BMP AND AUTO WPNS POS ENTRENCHED).	Ø718 FASC- F/2/7 TGP NUMBER AND LOCATION ON FIELD REVIEW REQ ON TEXT TERMINAL, SILENCE DENOTES; APPROVAL. WHEN CLEARED BY DIV FASC FLIGHT PROFILE LINES ON DSD.

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BASE LINE SEQUENCE OF EVENTS (Continued)

S-2	S-3	FASC	ACTION REQUIRED AND WORK STATION DISPLAY
ø719 AIR DEFENSE WARNING FROM DIV HQ (CONDITION YELLOW).	ø719 AIR DEFENSE WARNING FROM DIV HQ (CONDITION YELLOW).	ø719 AIR DEFENSE WARNING FROM DIV HQ (CONDITION YELLOW).	ø719 WARNING ON ALL DSD'S S-3 - ALERT ALL ASSAULT ELEMENTS.
ø72ø RECON SIGHTING (THREE HELICOPTERS FLYING AT LOW ALTITUDE TOWARD RANCHO TOWARD RANCHO SAN LUIS REY).	ø72ø	ø72ø	ø72ø S-2 - INFORM S-3 AND FASC FAAD LEADER XWT A/C SIGHTING TO FAAD TEAMS.
ø722 G/2/7 REPORT 2 T-72 TKS MOVING TO REINFORCE ENEMY IN BN OBJ-1.	ø722 G/S/7 REPORTS 2 T-72 MOVING TO REINFORCE ENEMY IN BN OBJ-1.	ø722 EOM E/2/7 AND G/2/7 81 MTR MISSIONS. RDS SHOT MSGS. MSN SUMMARIES FROM FO'S.	ø722 FASC- 81 MTR GUN TGP LINES OFF DSD. FIRE UNITS CAPABILITY DECREMENTED BY QTY 81MM RDS; EXPENDED.
ø724 INTEL SPOTREP (USUALLY RELIABLE SOURCE REPORTS ARMORED COLUMN REFUELING AT PERRIS).	ø724 E/2/7 SITREP (RESISTANCE INCREASING VIC BN OBJ-1).	ø724 G/2/7 TACT REQ CAS (2 T-72). E/2/7 TACT REQ CAS (2 T-72).	ø724 FASC- G/2/7 AND E/2/7 TGP NUMBERS AND LOCATION ON DSD. REVIEW REQ ON TEXT TERMINAL. SILENCE DENOTES APPROVAL. WHEN CLEARED BY DIV FASC FLIGHT PROFILE LINES ON DSD. (IF SAME TGP CANCEL ONE REQ).
			S-2 - INFORMS S-3 AND FASC OF SPOTREP.

BASE LINE SEQUENCE OF EVENTS (Continued)

S-2	S-3	PASC	ACTION REQUIRED AND WORK STATION DISPLAY
Ø727 F/2/7 RCVG MG AND RPG FIRE. (3 WIA) (1 TANK DAMAGED).	Ø727 F/2/7 RCVG MG AND RPG FIRE (3 WIA) (1 TANK DAMAGED).	Ø727 TGT REPORT F/2/7 CAS: F/2/7 TACT REQ 81 MTR MSN.	Ø727 PASC - FLIGHT PROFILE FROM CAS OFF DSD. P/2/1 TGT NUMBER AND LOCATION ON DSD. PASCO APPROVE AND ASSIGN TUBES. GUN TGT LINE FROM TUBES; ASSIGNED ON DSD. FIRE COMMAND XMITTED TO PIRING UNIT.
Ø730 E/2/7 ASSAULTING BN OBJ-2 G/2/7 PROVIDING SUPPORTING FIRE AND RPTS ENEMY PULLING BACK TO LINE OF TRENCHES.	Ø730 E/2/7 ASSAULTING BN OBJ-2 G/2/7 PROVIDING SUPPORTING FIRE AND RPTS ENEMY PULLING BACK TO LINE OF TRENCHES.	Ø730 F/2/7 REQ MEDEVAC.	Ø730 PASC - MEDEVAC SYMBOL ON DSD. PASCO REVIEW REQ. FLIGHT PROFILE ON DSD AFTER DIV FIRE CLEARING REQUEST.
Ø733 RECON SIGHTING (3 GAZ TRUCKS MOVING NORTH ON HWY 395 AT JCT WITH HWY 76.		Ø733 EOM F/2/7 MTR MSN. RDS SHOT MSG. MSN SUMMARY FROM FO.	Ø733 PASC - 81 MTR GUN TGT LINES; OFF DSD. FIRE UNIT CAPABILITY DECREMENTED BY QTY 81MM RDS EXPENDED. S-2 - INFORM S-5 AND PASC OF TRK MOVEMENT.

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BASE LINE SEQUENCE OF EVENTS (Continued)

S-2	S-3	FASC	ACTION REQUIRED AND WORK STATION DISPLAY
Ø735 P/2/7 ASSAULTING BN OBJ-3.	Ø735 P/2/7 ASSAULTING BN OBJ-3.	Ø735 E/2/7 TRCT REQ ARTY FIRE MISSION (T-72 TANK) TACT REQ 81 MTR MSN.	Ø735 FASC- E/2/7 AND P/2/7 TGT NUMBERS AND LOCATION ON DSD. FASCO REVIEWS AND ASSIGNS APPROPRIATE FIRE SUPP. GUN TGT LINES OR PLT PROFILES ON DSD. FIRE COMMAND XMITTED TO FIRE UNIT.
Ø737 E/2/7 ASSAULT HELD UP BY HEAVY AUTO WPNS AND WPNS AND 75MM FIRE.		Ø737 E/2/7 ASSAULT HELD UP BY HEAVY AUTO WPNS AND 75MM FIRE.	Ø737 FASC- G/2/7 TACT REQ ARTY FIRE MISSION (BMP'S AND TROOPS ENTRENCHED).
Ø738 RECON SIGHTING (2 MI-24 HINDS HEADING NORTH WEST PM LOCATION AT HWY 395 AND JCT WITH HWY 76).	Ø738		Ø738 S-2 - INFORM S-3 AND FASC S-3 - ALERT ASSAULT UNITS FASC- REVIEW FIRE MISSION REQUEST.
Ø739 AO SPARROW 2 RPTS ZSU-23-4 MOVING EAST ON MISSION RD FROM HWY 395.		Ø739 AO SPARROW 2 REQ ARTY MSN (ZSU-23-4).	Ø739 FASC- AO TGT NUMBER AND LOCATION ON DSD. REVIEW FIRE MISSION REQUEST.
			S-2 - INFORM S-3 OF ZSU-23-4.

BASE LINE SEQUENCE OF EVENTS (Continued)

	S-2	S-3	FASC	ACTION REQUIRED AND WORK STATION DISPLAY
Ø741	F/2/7 REPORTS ENEMY WITHDRAWING TO NORTHEAST TOWARD RED MTN RANCH. WITHDRAWAL BEING COVERED BY SMOKE.	Ø741 F/2/7 REPORTS ENEMY WITHDRAWING TO NORTHEAST TOWARD RED MTN RANCH. WITHDRAWAL BEING COVERED BY SMOKE.	Ø741 EOM P/2/7 MTR MSN. RDS SHOT MSG. MSN SUMMARY FROM FO TGT SUMMARY RPT.	Ø741 FASC- 81 MTR GUN TGT LINES OFF DSD FIRE UNIT CAPABILITY DECREMENTED BY QTY 61MM RDX; EXPENDED.
Ø744	E/2/7 RPTS ENEMY WITHDRAWING TO THE EAST. G/2/7 PULLING BACK TO LZ BUZZARD.	Ø744 E/2/7 REPORTS ENEMY WITHDRAWING TO THE EAST. G/2/7 PULLING BACK TO LZ BUZZARD.	Ø744 E/2/7 REPORTS ENEMY WITHDRAWING TO THE EAST. G/2/7 PULLING BACK TO LZ BUZZARD.	Ø744 S-3 - REQ FASC COORDINATE G/2/7 HELI/LIFT TO LZ VULTURE AT Ø32Ø.
Ø747	F/2/7 REPORTS 1ST PLT ATTACKED BY MI 24 (HEAVY CASUALTIES). 1 TANK DESTROYED	Ø747 F/2/7 REPORTS 1ST PLT ATTACKED BY MI 24 (HEAVY CASUALTIES). 1 TANK DESTROYED	Ø747 FAAD ENGAGES MI 24 (1 DESTROYED)	Ø747 S-3 - INFORM REGT OF AIR ATTACK. ADJUST FRIENDLY UNIT CAPABILITY.
Ø750	F/2/7 RPTS 9 KIA, 13 WIA FROM AIR ATK. (1ST PLT NO LONGER CMBT EFFECTIVE).	Ø750 F/2/7 RPTS 9 KIA, 13 WIA FROM AIR ATK. (1ST PLT NO LONGER CMBT EFFECTIVE).	Ø750 5/2/7 REQ MEDEVAC FOR 13 WIA	Ø750 FASC- MEDEVAC SYMBOL ON LSD. FASCO REVIEW REQUEST. FLIGHT PROFILE ON LSD AFTER DIV FASC CLEARS REQUEST. S-3 - ADJUST FRIENDLY UNIT CAPABILITY.

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BASE LINE SEQUENCE OF EVENTS (Continued)

S-2	S-3	PASC	ACTION REQUIRED AND WORK STATION DISPLAY
0753 INTERROGATION REPORT (ENEMY STRENGTH AND DISPOSITION).	0753 E/2/7 TACT REQ 81 MTR MSN (TROOPS IN OPEN).	0753 S-2 - INFORM S-3 AND FASC-E/2/7 TGT NUMBER AND LOCATION ON DSD.	FASCO APPROVES AND GUN TGT LINES FROM TUBES ASSIGNED APPEAR ON DSD. FIRE COMMAND XMITTED TO FIRING UNIT.
0758 E/2/7 RPTS ENEMY LOSSES OF PERSONNEL AND EQUIP VIC BN OBJ-2.	0758 E/2/7 RPTS ENEMY LOSSES OF PERSONNEL AND EQUIP VIC BN OBJ-2.	0758 E/2/7 81 MTR MSN. MISSION SUMMARY FROM P.O.	0758 S-2 - RECORD CHANGES IN ENEMY CAPABILITY FILES AS APPROPRIATE.
0800 REC'L S-2 REQ % OF DAMAGE DOWNED MI-24 AND THAT ALL SALVAGABLE EQUIP BE PROTECTED UNTIL TECHNICAL INSPECTION CAN BE PERFORMED.	0800 P/2/7 RPTS CONTINUATION OF THE ADVANCE AGAINST SCATTERED OPPOSITION.	0800 AO SPARROW 2 RPTS EOM (ZSU-23-4 DESTROYED).	0800 S-2 - REQ S-3 DIRECT SECURITY BE PLACED AROUND DOWNED MI-24. PASC-INFORM S-2. TGT NUMBER OFF DSD.
0803 E/2/7 RPTS BN OBJ-2 SECURED. CONTINUING THE ADVANCE.	0803 E/2/7 RPTS BN OBJ-2 SECURED. CONTINUING THE ADVANCE.	0803 E/2/7 TACT REQ ARTY FIRE MISSION.	0803 FASC-TGT NUMBER AND LOCATION ON DSD - REVIEW FIRE MISSION REQUEST ON "TEXT" TERMINAL.

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BASE LINE SEQUENCE OF EVENTS (Continued)

S-2	S-3	FASC	ACTION REQUIRED AND WORK STATION
Ø8Ø7 FORCE RECON SIGHTING (ENEMY PLT AT JCT HWY 71 AND HWY 395. 3 BMP'S AND 1 RADIO VEHICLE).	Ø8Ø7 G/2/7 AT LZ BUZZARD AND PREPARED FOR HELI-LIFT. F/2/7 HELDUP BY AUTO WPNS FIRE.	Ø8Ø7 F/2/7 TACT REQ 81 MTR MSN (AUTO WPNS POSITION).	Ø8Ø7 FASC- TGT NUMBER AND LOCATION ON DSD. PASCO APPROVES AND GUN TGT LINES FROM TUBES ASSIGNED APPEAR ON DSD. FIRE CMD XMITTED TO FIRING UNIT.
Ø81Ø E/2/7 RPTS TANK DAMAGED BY A.T. MINE.	Ø81Ø E/2/7 RPTS TANK DAMAGED BY A.T. MINE.	Ø81Ø	Ø81Ø
Ø812 F/2/7 RPT BN OBJ-3 SECURE ADVANCING TOWARD BN OBJ-6.	Ø812 F/2/7 RPTS BN OBJ-3 SECURE ADVANCING TOWARD BN OBJ-6.	Ø812 CH-53'S INBOUND TO LZ BUZZARD TO P/U G/2/7. EOM F/2/7 81 MTR MSN. MISSION SUMMARY FROM FO.	Ø812 FASC- CH-53 FLT PROFILE ON DSD. 81 MTR GUN TGT LINE OFF DSD. FIRE UNIT CAPABILITY DECREMENTED BY Q'TY 81MM RDS EXPENDED.
Ø815 INTEL SPOTREP (USUALLY RELIABLE SCURCE REPORTS ARMORED COLUMN MOVING SOUTH FROM LAKE ELSINORE).	Ø815	Ø815 E/2/7 REQ ARTY (HE AND SMOKE ON BN OBJ-4). G/2/7 REQ ARTY FOR LZ PREP (LZ VULTURE).	Ø815 S-2 - INFORM S-3 AND FASC OF ENEMY MOVEMENT. FASC- TGT NUMBERS AND LOCATIONS ON DSD. PASCO REVIEW REQUESTS ON TEXT TERMINAL.

BASE LINE SEQUENCE OF EVENTS (Continued)

S-2	S-3	FASC	ACTION REQUIRED AND WORK STATION DISPLAY
			Ø817 FASC- SELECT NEW CFL AND XMT TO REGT FOR APPROVAL. ONCE APPROVED XMT NEW CFL TO ALL ASSAULT UNITS.
Ø817 F/2/7 REPORT DOWNED MI-24 EXPLODED ON IMPACT. NO SALVAGABLE ITEMS.	Ø817 E/2/7 TACT REQ CFL SHIFT.		S-2 - INFORM REGT'L, S-3 (STATUS OF MI-24).
Ø820 G/2/7 HELI-LIFT ENROUTE TO BN OBJ-5.	Ø820 G/2/7 HELI-LIFT ENROUTE TO BN OBJ-5.	Ø820 FASC- CH-5'S FOLLOW ASSIGNED PROFILE ON DSD. FASCO INSTRUCTS PREP FIRES LIFTED.	
Ø823 G/2/7 AT LZ VULTURE. NO OPPOSITION. MOVING TOWARD BN OBJ-5.	Ø823 G/2/7 AT LZ VULTURE. NO OPPOSITION. MOVING TOWARD BN OBJ-5.	Ø823 E/2/7 TACT REQ CAS ON BN OBJ-4. ARTY TGT SUMMARY REPORT FOR LZ PREP AND FIRES ON BN OBJ-4. REGT'L FASC APPROVES NEW CFL.	S-3 - EVALUATE SITUATION AND XMT RESPONSE TO REGT'L.
Ø825 E/2/7 ASSAULTING BN OBJ-4. F/2/7 MOVING INTO BN OBJ-6 AGAINST LIGHT AND DIS-ORGANIZED OPPONITION.	Ø825 E/2/7 ASSAULTING BN OBJ-4. F/2/7 MOVING INTO BN OBJ-6 AGAINST LIGHT AND DIS-ORGANIZED OPPONITION.	Ø825 E/2/7 REQ 81 MTR MSN.	Ø825 FASC- TGT NO AND LOCATION ON DSD. FASCO APPROVE AND GUN TGT LINES FROM TUBES ASSIGNED APPEAK ON DSD. FIRE COMMAND XMITTED TO FIRING UNITS.

BASE LINE SEQUENCE OF EVENTS (continued)

S-2	S-3	FASC	ACTION REQUIRED AND WORK STATION DISPLAY
Ø828 G/2/7 RPTS BN OBJ-5 SECURE. NO OPPOSITION.	Ø828 G/2/7 RPTS BN OBJ-5 SECURE. NO OPPOSITION.	Ø828 G/2/7 TACT REQ ARTY FIRE MSN (BMP ON ROAD).	Ø828 FASC- TGT NUMBER AND LOCATION ON DSD REVIEW REQUEST ON TEXT TERMINAL.
Ø831 E/2/7 RPT ENEMY ABANDONING POSITIONS AND WITHDRAWING TO THE EAST. F/2/7 ENGAGING RETREATING ENEMY.	Ø831 E/2/7 RPTS ENEMY ABANDONING POSITIONS AND WITHDRAWING TO THE EAST. F/2/7 ENGAGING RETREATING ENEMY.	Ø831 F/2/7 REQ 81 MTR MSN (TROOPS IN OPEN).	Ø831 FASC- TGT NUMBER AND LOCATION ON DSD FASCO APPROVES AND GUN TGT LINE FROM TUBE; ASSIGNED APPEAR ON DSD. FIRE COMMAND XMITTED TO FIRING UNIT.
Ø835 E/2/7 RPTS ENEMY LOSSES OF EQUIP AND PERSONNEL BN OBJ-4. G/2/7 MOVING TOWARD MISSION RD. E/2/7 MASKING SUPPORTING FIRE.	Ø835 E/2/7 RPTS ENEMY LOSSES OF EQUIP AND PERSONNEL VIC BN OBJ-4. G/2/7 MOVING TOWARD MISSION RD. E/2/7 MASKING SUPPORTING FIRE.	Ø835 TGT SUMMARY REPORT.	Ø835 FASC- PROVIDE S-2 WITH TGT BDA%. S-2 - RECORD CHANGES OF ENEMY CAPABILITY AS APPROPRIATE.
Ø838	Ø838	Ø838 EOM E/2/7 AND F/2/7 MTR MSNS. MISSION SUMMARIES FROM FO'S.	Ø838 FASC- GUN TGT LINES OFF DSD. FIRE UNIT CAPABILITY DECREMENTED BY QTY 81MM RDS EXPENDED.

BASE LINE SEQUENCE OF EVENTS (Continued)

	S-2	S-3	FASC	ACTION REQUIRED AND WORK STATION DISPLAY
0842	E/2/7 REPORTS BN OBJ-4 SECURE P/2/7 REPORTS ENEMY SUR- RENDERING.	0842 E/2/7 REPORTS BN OBJ-4 SECURE P/2/7 REPORTS ENEMY SUR- RENDERING.	0842	0842
0845	E/2/7 ADVANCING TO REGT'L OBJ-1.	0845 E/2/7 ADVANCING TO REGT'L OBJ-1.	0845	0845

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**APPENDIX B
TRAINING**

**APPENDIX B
TRAINING**

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TCO FUNCTION CHARTS

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APPENDIX B
TRAINING

B.1 TRAINING OBJECTIVE

The objective of the training package contained in this appendix is to provide a summation of the training required in order to qualify FMF participants and MCTSSA support personnel for efficient conduct of the test.

B.2 SPECIFIC TRAINING PROGRAMS

B.2.1 FMF Test Participants

Training for FMF personnel serving as test participants will be conducted in the following areas.

B.2.1.1 Orientation

An orientation brief as outlined in Tab 1 will be presented to the test participants during the brief and introduction period scheduled in paragraph 2.2.2.

B.2.1.2 Operation Brief

An operations brief, consisting of the special scenario and the current Frag Order of the battalion, will be presented just prior to commencing the practice run.

B.2.1.3 Practice Run

A practice run, as scheduled in paragraph 2.2.2., will be conducted to familiarize the participants with the facilities, capabilities, and procedures for the test.

B.2.2 MCTSSA Support Personnel

MCTSSA test support personnel will receive the same training as FMF personnel but at a time prior to the test rehearsal and the pilot test.

a. MCTSSA enlisted Marines designated as console operators will receive system training under supervision of Tactical Systems Development Branch (TSDB) at a schedule to be determined.

b. MCTSSA officers performing duties as a Military Controller will receive a briefing/orientation on test schedule, test objectives, general and special situation, and their duties as Military Controllers conducted by TSDB at a schedule to be determined. (Ref: Handbook for TCO Test and Evaluation.)

c. MCTSSA officers designated as members of the Control Simulation Team (CST) will be briefed by Planning Research Corporation (PRC) at a schedule to be determined. (Ref: Handbook for TCO Test and Evaluation.)

B.3 FACILITIES AND MATERIAL REQUIREMENTS

B.3.1 Classroom

The MCTSSA GTF (Building 31331) is considered appropriate for all test training. The following equipment is needed for the classroom:

- a. Seating for six
- b. Overhead projector
- c. Screen
- d. Pencils and pads

B.3.2 Test Facility

The MCTSSA CTF will be required for exclusive use during rehearsal, pilot test and actual test period on dates contained in the schedule in paragraph 2.2.2.

B.3.3 Handouts

The following information will be provided to test participants in the form of a data booklet to be used as a reference prior to and during the tests:

- a. General and special situation
- b. Watch Officer functions (See Function Charts, pages B-6 through B-12.)

B.4 DETAILED LESSON PLANS

Detailed lesson plans will be published under separate cover.

TAB

ORIENTATION BRIEF OUTLINE

- I. Welcome Aboard
- II. Role of MCTSSA
- III. Orientation
 - A. Organization
 - B. Schedule
 - C. Administrative Remarks
 - D. Test Purpose
 - E. Test Facility Familiarization
 - F. Review of Staff Procedures
 - G. General Scenario

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APPENDIX C
DATA MANAGEMENT SYSTEM

APPENDIX C
DATA MANAGEMENT SYSTEM

C.1 INTRODUCTION

The purpose of the data management system is to organize the data for the test to ensure that all required data is collected and handled in an orderly manner so that the reduced data is available for analysis as soon as possible after testing ends.

C.2 DATA ORGANIZATION

C.2.1 Files

Test data consists of 14 separate files: 12 test iteration files (see table C-1), one Tally File, and one Structures Interview File.

Table C-1. Iteration Number Chart

Iteration	Mix	Team
1	A	1
2	C	1
3	D	1
4	B	2
5	A	2
6	C	2
7	C	3
8	D	3
9	B	3
10	D	4
11	B	4
12	A	4

C.2.2 Test Iteration File

Each test iteration file will contain the information described in the following paragraphs.

C.2.2.1 Cover

Each test iteration file will be clearly marked on the outside with the following information:

- a. Iteration number (1-12).
- b. Date of iteration (MO-DA).
- c. Time of iteration (AM-PM).
- d. Test participant team (1, 2, 3, 4).
- e. Work station mix (A, B, C, D).
- f. Data complete certification.
- g. Date all tally entries made (MO-DA).
- h. Signature of data manager.

C.2.2.2 Contents

Each test iteration file will contain the following information:

- a. Iteration file inventory (tab 1)
- b. Work station journals (2, 3, 4) depending on work station mix.
- c. Work station incoming message files (2, 3), depending on work stations.
- d. Data Collection Reduction Form--Objective 1a (tab 2)
- e. Data Collection Reduction Form--Objective 1b (tab 3)
- f. Data Collection Reduction Form--Objective 2 (tab 4)
- g. Data Collection Reduction Form--Objective 3 (tab 5)
- h. Battlefield Perception Checklist (tabs 6, 7, and 8)
- i. Four end of iteration questionnaires (tab 9)

C.2.3 Tally File

C.2.3.1 Cover

Each tally file cover will be plainly marked on the outside with the following information:

- a. Date completed.
- b. Signature of data manager.

C.2.3.2 File Content

Each tally file will contain the following information and forms:

- a. Tally file inventory (tab 10)
- b. Objective Tally Sheet--Objective 1a (tab 11)
- c. Objective Tally Sheet--Objective 1b -do-
- d. Objective Tally Sheet--Objective 2 -do-
- e. Objective Tally Sheet--Objective 3 -do-
- f. Questionnaire Tally Sheet--Question 1 (tab 12)
- g. Questionnaire Tally Sheet--Question 2 -do-
- h. Questionnaire Tally Sheet--Question 3 -do-
- i. Questionnaire Tally Sheet--Question 4 -do-
- j. Questionnaire Tally Sheet--Question 5 (tab 13)
- k. Battlefield Perception Tally Sheet (tab 14)

C.2.4 Structured Interview File

The structured interview file will be clearly marked on the outer cover with the following information:

- a. Date all entries made.
- b. Signature of the interviewer.

The contents of the file will contain the written synopses highlighting the responses in all four of the structured interviews. (Issues contained in tab 15.)

C.3 DATA MANAGEMENT

Data management for this test will consist of two major functions, data collection and data reduction. Data reduction is further divided into post iteration and post test segments.

C.3.1 Data Collection

C.3.1.1 Objectives 1 through 3

Data collection for objectives 1 through 3 will be accomplished automatically by the GTF file system. At the completion of each iteration, test controllers will deliver to the data manager one copy of the work station journal and one copy of the incoming message file for each work station used during that iteration. The data manager will place these items in the iteration file and note this on the iteration file inventory by initialing the appropriate line. He will also enter iteration number, date, and time as shown in paragraph C.2.2.2.

C.3.1.1 Objectives 4a and 4b

Data collection for objectives 4a and 4b will consist of the End of Iteration questionnaire which the test supervisor will administer to each test participant after each test iteration. After checking for completeness, the test supervisor will initial the upper left hand corner of each form and indicate present and previous work station on the bottom of each form. He will then give them to the data manager who enters the iteration number in the bottom right hand corner and place them in the iteration file and initials the iteration file inventory.

C.3.1.2 Objective 4c

Data collection for objective 4c will consist of responses to the Battlefield Perception Checklist. During each test iteration, all test action will "freeze" and the test supervisor will administer the appropriate Battlefield Perception Checklist. He will evaluate the responses and place his signature and the date in the lower right corner of the form. After completing the checklists, he will give them to the data manager who will place them in the iteration file and initial the inventory sheet. At the end of each iteration, the test supervisor will review the iteration file to ensure all the required data is included. He will then sign and date the outside of the iteration file certifying that the data is complete.

C.3.2 Post-Iteration Data Reduction

Post iteration data reduction will occur in either the morning or afternoon following completion of each iteration and will consist of the procedures described in the following paragraphs.

C.3.2.1 Objectives 1, 2, and 3

Data technicians will examine the work station journal file (objectives 1 and 2) and the incoming message file (objective 3) and complete the appropriate data collection/reduction form. When the form is complete, the data technician will initial the form and indicate the date the form is completed. The same data technician will also initial the appropriate line of the iteration file inventory. Then, he will enter the bottom line number from each form in the correct block of the corresponding objective tally sheet in the tally file. When this is completed, the data technician will again initial the appropriate line on the iteration file inventory.

C.3.2.2 Objectives 4a and 4b

The tally file will contain a questionnaire tally sheet for each question in the end of iteration questionnaire. The data collector will mark each of these sheets (upper chart not lower one) with the responses from all four questionnaires. When this is completed, the data technician will initial the appropriate line on the iteration file Inventory, return the questionnaires to the iteration file, and the tally sheet to the tally file.

C.3.2.3 Objective 4c

The data technician will enter the scores from the Battlefield Perception Checklist into the corresponding blocks on the upper chart of the checklist tally sheet in the tally file. When this is completed, the data technician will initial the appropriate line on the iteration file inventory, and return the checklist to the iteration file and the tally sheet to the tally file.

C.3.2.4 Completed Inventory

When the iteration file inventory is completely filled out, the data technician will check the file for correctness. He will then give the file to the data manager who will in turn check the contents, secure the file, and sign and date the outside of the file. Post iteration data for that iteration will then be complete. The file will then be given to the test supervisor for storage.

C.3.3 Post-Test Data Reduction

Post-test data reduction will take place after all iterations of the test by all test participants have been completed. Procedures are outlined in the following paragraphs.

C.3.3.1 Tally File

Post test reduction will begin when all twelve test iteration files have been collected, secured, and dated.

C.3.3.1.1 Objectives 1 through 3

For objectives 1 through 3, the data technicians will add totals for the rows and columns and enter these totals on each of the objective sheets and initial and date the sheet and then initial the tally file inventory.

C.3.3.1.2 Objectives 4a and 4c

For objectives 4a and 4c, the data technician will enter the data from the upper charts on each questionnaire tally sheet and each Battlefield Perception tally sheet on the lower (end of test) chart of each form. The data technician will then enter the total, initial the sheet, date the sheet, and initial the tally file inventory.

C.3.3.2 Structure of Interview File

For objective 4d, the interviewer records his written responses to all of the interviews into the structured interview file, then signs and dates the outside of the file. He then secures the file and turns it over to the test supervisor.

C.3.3.3 Completed Tally File Inventory

When the tally file inventory is completely filled out, the data manager will check file contents for completeness and accuracy, secure the file, sign and date the file cover, and turn the file over to the test supervisor. Post-test data reduction is then complete.

TAB 1

BATTALION COC TEST
ITERATION FILE INVENTORY

ITERATION _____

DATE OF ITERATION _____

TIME OF ITERATION _____ (AM/PM)

TEST PARTICIPANT TEAM _____

WORK STATION MIX _____

REC'D DATA MGR INITIAL	ITEM	COMPLETED TALLIED DT INIT. DT INIT.
_____	Data collection/reduction form-- objective 1a	_____
_____	Data collection/reduction form-- objective 1b	_____
_____	Data collection/reduction form-- objective 2	_____
_____	Data collection/reduction form-- objective 3	_____
_____	Battlefield Perception Checklist	_____
_____	End of iteration questionnaire (4)	_____
_____	Work Station Journals (No:)	
_____	Incoming message files (No:)	

TAB 2

BATTALION COC TEST
DATA COLLECTION/REDUCTION FORM
OBJECTIVE 1A--ARTY STOP MSGS

ITERATION _____

TACTICAL POSITION: FASC/FSP

CALL FOR FIRE TIME	TARGET NUMBER	LIMIT TIME	STOP MSG (Y/N)	TIME (IF-Y)	SEARCH LIMIT TIME
--------------------------	------------------	---------------	----------------------	----------------	-------------------------

A = No. stop msgs before search limit time _____

B = No. stop msgs before limit time _____

A + 3 = _____

B + 3 = _____

Date form completed _____

Initials _____

22TCC1 'U-TR-C'

TAB 3

BATTALION COC TEST
DATA COLLECTION/REDUCTION FORM
OBJECTIVE 1 B -81mm TIME

ITERATION _____

TACTICAL POSITION: FASC/FSP

.81 CALL FOR	.81	MSG TO	B - A
FIRE	TARGET	GUNS	IN MINUTES
TIME	NUMBER	TIME	

TOTALS: C = NO. MSGS _____ D = TIME _____

D + C = _____

Data Form Completed _____
Initials _____

22TCC1/U-TR-C

TAB 4

BATTALION COC TEST
DATA COLLECTION/REDUCTION FORM
OBJECTIVE 2--COMBAT INFORMATION

ITERATION _____

TACTICAL POSITION: S-3

SEARCH START TIME	SUBJECT	SEARCH LIMIT TIME	MSG TO CO.'S SENT? (Y/N)
-------------------------	---------	-------------------------	--------------------------------

A = TOTAL: _____

A + 5 = _____

Date Form Completed _____
Initials _____

22TOC1 U-TR-C

DAB 5

BATTALION COC TEST
DATA COLLECTION/REDUCTION FORM
OBJECTIVE 3--DATA BASE UPDATE

ITERATION

TACTICAL POSITION: S2/S3

MSG TIME	SUBJECT	LIMIT TIME	DATA BASE UPDATE (Y/N)	DATA BASE UPDATE (IF YES)
-------------	---------	---------------	------------------------------	---------------------------------

A = No. data base updates before limit time

A + 16 =

Date Form Completed
Initials

TAB 6

BATTALION COC TEST
BATTLEFIELD PERCEPTION CHECKLIST--I

ITERATION _____

<u>QUESTION</u>	<u>PLAYER</u>	<u>SCORE</u>
-----------------	---------------	--------------

a S2W

What is the location of the CLOSEST enemy air-field to 2/7's ZOA capable of supporting attack aircraft?

Ans: Yuma and El Centro _____

b S3W

What is the composition of the enemy forces facing 2/7?

Ans: A 2/3 strength motorized rifle battalion supported by an understrength company of tanks. _____

c S3

What is the size and location of the closest enemy reinforcements?

Ans: A motorized rifle battalion at Sun City. _____

d FASC

What is the current AIR RAID warning and FAAD weapon condition?

Ans: Warning yellow, weapons tight. _____

Date Completed _____

Test Supervisor's Signature _____

TAB -

BATTALION COC TEST
 BATTLEFIELD PERCEPTION CHECKLIST--II

ITERAION _____

<u>QUESTION</u>	<u>PLAYER</u>	<u>SCORE</u>
a	S2W	
	What type of aircraft were observed heading toward 2/7's ZOA?	
	Ans: MI-24 Heli gunships	_____
b	S3W	
	In what activity is G/2/7 ENGAGED?	
	Ans: Pulling back to LZ BUZZARD in preparation for a helo-lift.	_____
c	S-3	
	What is G/2/7's mission?	
	Ans: To support E/2/7 from the flank.	_____
d	F	
	What fire missions are currently in progress against what targets?	
	Ans: An AO is controlling an Arty mission against A ZSU-23-4 and GA2-66 trucks along East Mission Road.	_____

Date Completed _____
 Test Supervisor Signature _____

TAB 3

BATTALION CCC TEST
BATTLEFIELD PERCEPTION CHECKLIST--III

ITERATION _____

QUESTION PLAYER

a S2W

To what division is the enemy reinforcing column subordinate?

Ans: The 301st motorized rifle division. _____

b S3W

What is the present tactical situation in the vicinity of battalion objectives 2 and 3?

Ans: Companies E and F are continuing the attack with the enemy defenders falling back to new positions. _____

c S3

What is the location of the closest enemy artillery position?

Ans: Rancho San Luis Rey. _____

d F

Are all battalion objectives effectively covered by 81mm mortar fire?

Ans: Yes. _____

Date Completed _____

Test Supervisor Signature _____

TAB 9

BATTLION COC TEST
END OF ITERATION QUESTIONNAIRE

NAME _____ RANK _____ TEST BILLET _____

Circle one choice for each question.

1. How easy was it for you to get accurate data from this work station mix?

Very Rather So-So Rather Very
Difficult Difficult Easy Easy

2. How easy was it for you to use the data provided by this work station mix to accomplish your mission?

Very **Rather** **So-So** **Rather** **Very**
Difficult **Difficult** **Easy** **Easy**

3. How easy was it for you to process (store, display and disseminate) information?

Very Rather So-So Rather Very
Difficult Difficult Easy Easy

4. Considering your responses to the above questions, how would you rate the overall capability of the mix you just used to perform as an instrument?

4. Considering your responses to the above questions, how would you rate the overall capability of the mix you just used to perform as an information system.

Very Poor **Poor** **Only Fair** **Good** **Excellent**

5. Compare this work station mix with the work station mix used in the test situation just before this one. Which work station mix would you rather use?

This mix

The Previous Mix

Date Completed _____

Initials _____

TAB 10

BATTALION COC TEST
TALLY FILE INVENTORY

<u>ITEM</u>	<u>COMPLETED</u> (DT INIT)
Objective Tally sheet--Objective 1a	_____
Objective Tally sheet--Objective 1b	_____
Objective Tally sheet--Objective 2	_____
Objective Tally sheet--Objective 3	_____
Checklist Tally Sheet	_____
Questionnaire Tally sheet--Question 1	_____
Questionnaire Tally sheet--Question 2	_____
Questionnaire Tally sheet--Question 3	_____
Questionnaire Tally sheet--Question 4	_____
Questionnaire Tally sheet--Question 5	_____

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TAB 11

BATTALION COC TEST
OBJECTIVE TALLY SHEET

OBJECTIVE: Circle Correct One

1a, 1b, 2, 3

TOTAL

1	A	C	D
2	B	A	C
3	C	D	B
4	D	B	A

TOTAL

Date Completed _____

Initials _____

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TAB 12

BATTALION COC TEST
QUESTIONNAIRE TALLEY SHEET

CIRCLE CORRECT ONE

QUESTION 1 2 3 4

CATEGORIES

WORK STATION MIX	VERY DIFFICULT	RATHER DIFFICULT	SO-SO	RATHER EASY	VERY EASY
------------------------	-------------------	---------------------	-------	----------------	--------------

A

B

C

D

END OF TEST CHART

MIX	VD	RD	SS	RE	VE	TOTAL
A						
B						
C						
D						

TOTAL

Date Completed _____

Initials _____

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TAB 13

BATTALION COC TEST
QUESTIONNAIRE TALLEY SHEET

QUESTION 5

MIX

A B C D

A

BETTER B

MIX

C

D

END OF TEST CHART

A B C D TOTAL

A				
B				
C				
D				

TOTAL

Date Completed _____

Initials _____

TAB 14

BATTALION COC TEST
 BATTLEFIELD PERCEPTION TALLEY SHEET

	a	b	c	d	
1					
12					
5					
9					
4					
11					
6					
2		.			
7					
10					
8					
3				-	

END OF TEST CHART
 (BLOCK TOTALS)

	a	b	c	d	TOTAL
A					
B					
C					
D					

Total Completed _____
 Initials _____

TAB 15

BATTALION COC TEST
STRUCTURED ITERATION ISSUES

How many automated work stations does the infantry battalion need in the offense?

Why?

What did you like the most about an automated COC?

Why?

What did you like least about an automated COC?

Why?

Would the FASC want to monitor S1 FO corrections?

Why (not)?

Were you able to effectively process calls for fire?

Were you able to keep the companies informed as to items pertaining to their mission?

Was there effective coordination between the S2, the S3, and the FASC?

Would you rather fight the war with or without an automated COC?

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APPENDIX D
DETAILED ANALYSIS

APPENDIX D
DETAILED ANALYSIS

Analysis: Objectives One - Three

FACTOR: Work station mix (Treatment)
Four levels - A, B, C, D

DESIGN: Type III incomplete Latin square
Ref: Cochran & Cox, Wiley - 1957

BLOCK EFFECTS: Test participant team (row), four levels--1, 2, 3, 4
Experimentation order (columns), three levels--1st, 2nd,
3rd

$$\begin{aligned} Q_A &= 3\Sigma A + \Sigma_3 & \text{where} & \Sigma_A = A_1 + A_2 + A_3 \\ Q_B &= 3\Sigma B + \Sigma_1 & & \Sigma_B = B_1 + B_2 + B_3 \\ Q_C &= 3\Sigma C + \Sigma_4 & & \Sigma_C = C_1 + C_2 + C_3 \\ Q_D &= 3\Sigma D + \Sigma_2 & & \Sigma_D = D_1 + D_2 + D_3 \end{aligned}$$

$$\begin{aligned} \text{Check: } Q_A + Q_B + Q_C + Q_D &= 4T \\ \Sigma_A + \Sigma_B + \Sigma_C + \Sigma_D &= \Sigma_{1st} + \Sigma_{2nd} + \Sigma_{3rd} = \Sigma_1 + \Sigma_2 + \Sigma_3 + \Sigma_4 = T \end{aligned}$$

T = GRAND TOTAL

EXPERIMENTATION ORDER

		1st	2nd	3rd	ROW TOTAL
Test Participant Team	1	A ₁	C ₂	D ₃	Σ_1
	2	B ₁	A ₂	C ₃	Σ_2
	3	C ₁	D ₂	B ₃	Σ_3
	4	D ₁	B ₂	A ₃	Σ_4

Column Total: Σ_{1st} Σ_{2nd} Σ_{3rd}

$$SS_{\text{Total}} = \sum \sum \sum x_{ijk}^2 - \frac{\bar{x}^2}{12}$$

$$SS_{\text{Row}} = \frac{\sum_1^2 + \sum_2^2 + \sum_3^2 + \sum_4^2}{3} - \frac{\bar{x}^2}{12}$$

$$SS_{\text{Column}} = \frac{\sum_{1\text{st}}^2 + \sum_{2\text{nd}}^2 + \sum_{3\text{rd}}^2}{4} - \frac{\bar{x}^2}{12}$$

$$SS_{\text{Treatment}} = \frac{Q_A^2 + Q_B^2 + Q_C^2 + Q_D^2 - 4T^2}{24}$$

$$df_{\text{Row}} = 3$$

$$df_{\text{Column}} = 2$$

$$df_{\text{Treatment}} = 3$$

$$df_{\text{Error}} = 3$$

SS--sum of squares

df--degrees of freedom

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TEST PLAN(U) MARINE CORPS TACTICAL SYSTEMS SUPPORT
ACTIVITY CAMP PENDLETON CA 09 OCT 81

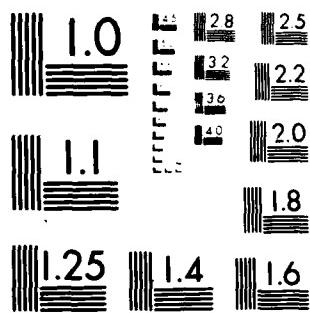
2/2

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F/G 15/3

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 166-A

Analysis - Objective FourAnalysis for MOPs 4(a) and 4(b)

For questions one through four the steps for analysis are as follows. (Glenn F. Lindsay, Naval Postgraduate School, "Categorical Judgements," August 1976, unpublished paper.)

Raw Frequency Array (f_{ij})

CATEGORY		Very Difficult	Rather Difficult	So-So	Rather Easy	Very Easy
WORK STATION MIX	A	f_{11}	f_{12}	f_{13}	f_{14}	f_{15}
B						
C						
D	f_{41}					f_{55}

i = instances (rows)

j = categories (columns)

1. f_{ij} = raw frequency data = number of times work station mix was placed in category j.

2. Construct a P_{ij} matrix where

$$P_{ij} = \frac{\sum_{k=1}^j f_{ik}}{\sum_{k=1}^5 f_{ik}}$$

3. Construct a Z_{ij} matrix where

$$Z_{ij} = \int_{-\infty}^{z_{ij}} F(z) dz$$

and F is the standard normal probability density function.

4. Compute row average $\bar{z}_i = \frac{1}{4} \sum_{j=1}^4 z_{ij}$

5. Compute column average $b_j = \frac{1}{4} \sum_{i=1}^4 z_{ij}$ (upper bound of category j)

6. Compute grand average $\bar{b} = \frac{1}{4} \sum_{j=1}^4 b_j$

7. Compute

$$B = \sum_{j=1}^4 (b_j - \bar{b})^2$$

3. For each row compute

$$A_i = \sum_{j=1}^4 (z_{ij} - \bar{z}_i)^2$$

9. For each row compute

$$\sqrt{B/A_i}$$

10. For each instance (row) compute

$$s_i = \bar{b} - \bar{z}_i \sqrt{B/A_i} = \text{scaled value of work station mix } i$$

For question five the steps for analysis are as follows. (Glenn F. Lindsay, "On Constructing Interval Scales from Ordinal Judgements," July 1977, unpublished paper.)

1. Construct f_{ij} matrix where f_{ij} is the number of test participants who ranked work station mix j as being a better information system than work station mix i. $i = 1$ to 4 $j = 1$ to 4

2. Construct a P_{ij} matrix where

$$P_{ij} = \frac{f_{ij}}{f_{ij} + f_{ji}}$$

3. Construct a Z_{ij} matrix where

$$P_{ij} = \int_{-\infty}^{Z_{ij}} F(z) dz$$

and F is the standard normal probability density function.

4. Compute column sums (P_j) and put in rank order.
5. Let j and k be two work station mixes adjacent in the ranking (k ranked higher than j).

θ_{jk} = set of rows with entries in both columns j and k,

n_{jk} = number of rows in θ_{jk} ,

then

$$S_k - S_j = \frac{\sum_{i \in \theta_{jk}} (z_{ik} - z_{ij})}{n_{jk}}$$

6. Letting $S_j = 0$ for the lowest ranked work station mix yields 3 equations in three unknowns which can be solved resulting in S_j = scaled value of work station mix j.

As a check on the validity of the test participants' comparisons for MOP 5 (b), the Kendall coefficient of concordance will be used to test the hypothesis that the test participants were not consistent in their rankings. (Sydney Siegel, "Non-parametric Statistics," McGraw-Hill, 1956). Since each test participant can fully rank three mixes and only partially rank the fourth, for the purposes of this test the fourth mix will be placed in the second of the three possible ordered positions it could hold.

ANALYSIS FOR MOP 4c

Factors: Test participant billet

Four levels

S2W--S2 Watch Officer

S3W--S3 Watch Officer

S3--S3 Officer

F--FASC Watch Officer

Work Station Mix

Four levels--A, B, C, D

TEST PARTICIPANT BILLET

	S2W	S3W	S3	F
A	I 1A II 4A III 2A	I 1B II 4B III 2B	I 1C II 4C III 2C	I 1D II 4D III 2D
WORK STATION MIX	I 3A II 2A III 4A	I 3B II 2B III 4B	I 3C II 2C III 4C	I 3D II 2D III 4D
C	I 2A II 1A III 3A	I 2B II 1B III 3B	I 2C II 1C III 3C	I 2D II 1D III 3D
D	I 4A II 3A III 2A	I 4B II 3B III 1B	I 4C II 3C III 1C	I 4D II 3D III 1D

Each cell contains three entries. Each entry is an evaluation (D, 1 or 2) from the Battlefield Perception checklist. There will be twelve checklists, each with four evaluations, which will yield a total of 48 evaluations. The code for the entry notation is as follows:

ROMAN NUMERAL - Checklist type (there are three different checklists--I, II or III)

ARABIC NUMERAL - Test participant team (there will be four different test participant teams--1, 2, 3, and 4)

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LOWER CASE LETTER - Question. (Each checklist has four questions.

Question a is for the S2 watch officer. Question b
is for the S3 watch officer. Question c is for the
S3 officer. Question d is for the FASC watch
officer.)

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